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Reference

DEPARTMENT OF THE ARMY FIELD MANUAL

MANEUVER CONTROL



HEADQUARTERS, DEPARTMENT OF THE ARMY
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MANEUVER CONTROL

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PART ONE

TACTICAL EXERCISES

CHAPTER 1

INTRODUCTION

1. Purpose and Scope

This manual contains the principles, procedures, and techniques for use in the planning, preparation, and conduct of tactical exercises. Part one deals with the development of tactical exercises as a training medium for units from squad to field army size. Part two deals with the umpiring and control of tactical exercises during their execution.

2. Application

a. Combat units within the division are used primarily to discuss and illustrate the application of principles and procedures. Other commands of any type or size can readily adapt these principles and procedures to their particular requirements. Organi-

zation and procedures for maneuver control may require modification depending on the training objectives, type and scale of tactical exercise, and available resources.

b. This manual is a sequel to FM 21-5.

c. Users of this manual are encouraged to submit recommended changes or comments for improvement. Comments should be keyed to the specific page, paragraph, and line of the text in which the change is recommended. Reason should be provided for each comment to insure understanding and permit complete evaluation. Comments should be forwarded direct to the United States Army Command and General Staff College, Fort Leavenworth, Kansas.

CHAPTER 2

TACTICAL EXERCISES—GENERAL

Section I. TACTICAL TRAINING

3. Purpose and Definition

a. Tactical training is the training of individuals and units in all phases of combat operations. Soldiers are first trained to be proficient as individuals and then as members of small units. Small units are then trained to become a part of a larger unit, which in turn is trained to function with other units of the combat arms and administrative and technical services. Tactical exercises are used to train the individual, unit, staff, and combined arms. Part one of this manual is designed to assist commanders at all levels to select appropriate tactical exercises that are consistent with specific training needs and local facilities, and to describe procedures for planning, preparing, and conducting them.

b. Tactical exercises are exercises that require practical application of combat, combat support, or combat service support procedures and doctrine in assumed tactical situations.

4. Need for Realism

The ultimate goal of all military training is combat efficiency and success in battle; the purpose of tactical exercises is to insure that goal. Tactical exercises accomplish their purpose only if they present logical and realistic situations, including enemy representation; and if they are adequately controlled. Exercises must be executed with firmness and force, as one coherent operation, and must be followed by a thorough critique that outlines strengths and weaknesses.

5. Sequence

Troops and units are required to participate in appropriate tactical exercises as early in the training cycle as their degree of training permits. Since all tactical exercises are applications of classroom theory, they follow instruction in basic methods and techniques.

6. Applicatory Method

The Army emphasizes application in training. The applicatory method, as it applies to tactical training, involves an explanation of a tactical principle, method, or technique to be learned, followed by its application under an assumed combat situation. For balanced and progressive training, each type of tactical exercise should be used when appropriate. Map exercises, staff rides or walks, historical rides, field exercises, tactical drills, and field maneuvers are tactical exercises used to portray combat situations. They require a practical application of tactical principles, methods, and techniques. Each exercise has certain advantages.

7. Nature and Content of Tactical Exercises

a. The basic types of tactical exercises are the terrain model exercise, tactical drill exercise, terrain exercise, map exercise, map maneuver, command post exercise, field exercise, and field maneuver.

b. Tactical exercises vary in their objectives, size, participation, degree of control, and the amount and complexity of simulation required to achieve combat realism.

c. Tactical exercises require the use of every aspect of combat intelligence from planning and directing the collection and reporting of information to the production, use, and dissemination of intelligence by the commander and his staff.

- (1) Particular attention is devoted to the realistic employment and integration of combat surveillance and target acquisition, whether simulated or actual, within the framework of the intelligence system of the tactical units.
- (2) Collection of information on enemy targets and the rapid reporting, analysis, and exploitation of resulting target intelligence is given special emphasis in all tactical exercises.

- (3) Aggressor doctrine emphasizes the use of espionage, sabotage and other subversive actions. Security consciousness and the integration of counterintelligence activities into maneuver control and evaluation plans are stressed during the planning and conduct of tactical exercises.

d. Nuclear play is included as appropriate. Special emphasis is placed on the realistic integration of nuclear weapons play in planning, the effects of nuclear weapons, and the resulting physical and psychological effects on civilian populations and military forces.

e. In CBR play the employment of CBR weapons, the defensive aspects of CBR operations, and effects on civilian populations are stressed.

f. Logistical play emphasizes the ability of units to sustain themselves in the field and simulates the losses, casualties, damage, interruptions, and delays which confront all commanders in combat.

g. Civil affairs play includes, as appropriate, complex civil-military coordination required in providing advice to and liaison with an existing government, restoration of effective government, assumption of partial or complete executive, legislative and judicial control of an area, and in planning and execution of counterinsurgency operations.

h. The maintenance of personnel strength, casualties and replacements, labor requirements, morale, and personnel services are realistically played.

8. One-Sided and Two-Sided Tactical Exercises

Tactical exercises are either one-sided or two-sided. They may also be free or controlled. In a

one-sided exercise the opposing force is represented by controller and umpire personnel. In a two-sided exercise the forces involved maneuver against each other. The controllers monitor and the umpires judge the actions of both sides to keep the exercise within the stated objectives. In the field exercise and field maneuver, umpires arbitrate the results of engagements using rules and criteria established for that purpose.

9. Free and Controlled Tactical Exercises

a. Within prescribed limits, both sides are permitted freedom of operation during the conduct of the free exercise.

b. The controlled exercise is conducted according to a preconceived plan for one or both sides. Controllers and umpires assist in forcing the play of the exercise to follow the plan.

c. Most exercises fall somewhere between these two extremes. It is normal to require one side to attack while the other defends, delays, or withdraws. The situation may be reversed during the course of the exercise.

d. Control may vary at different tactical levels. The brigade may be closely controlled in what it may plan or execute while the company or platoon is less restricted in the actions it may take.

e. There is a relationship between control and umpire resources that are employed and the degree of control of the tactical exercise. Generally speaking, the freer the exercise from the player standpoint, the more control resources that are required for analysis and evaluation of the effects of fire and maneuver play. An exercise rigidly controlled by plan requires fewer umpires and controllers.

Section II. TYPES OF TACTICAL EXERCISES

10. Terrain Model Exercise

a. A terrain model exercise is a tactical exercise in which a sandtable or some other terrain model is substituted for the terrain. Friendly and enemy troops are represented by suitable miniatures or tabs.

b. This exercise is excellent for teaching basic principles to small units, but it may be used at any level. The sandtable or terrain model is an excellent training aid for critiques of completed operations and briefings for future operations.

c. A terrain model exercise may be conducted as a lecture, conference, demonstration, or practical exercise. It can be used in individual and unit training.

11. Tactical Drill Exercise

A tactical drill exercise is an exercise conducted "by the numbers." It is a form of small unit training in which the fundamentals of tactics are stressed by progressive repetition. In each exercise, the leader states the problem to his unit, explains the solution and the reasons for adopting the particular solution, and conducts the unit through the problem according to the stated solution. He makes appropriate on-the-spot corrections of individual actions. He then reviews the entire problem to insure thorough understanding by every individual in the unit. The exercise is repeated until the leader is satisfied with the unit's proficiency. The procedures used to develop a tactical drill exercise are similar to those

used for a field exercise as outlined in paragraphs 29 through 38.

12. Terrain Exercise

a. A terrain exercise is a tactical exercise in which the disposition and movement of simulated troops are planned and discussed on a particular piece of ground. This exercise is especially useful in training small unit commanders in terrain appreciation and reconnaissance techniques, and may be used to train commanders and staff officers at all levels.

b. Personnel can participate in the terrain exercise as individuals or as members of staff groups.

13. Map Exercise

a. A map exercise is a tactical exercise in which a series of related situations requiring individual or group solutions is stated. The exercise is followed by a discussion of the solutions presented. A map is the only guide to the terrain. This exercise is especially useful for instruction in command principles and staff techniques and procedures for commanders and staffs of brigade, division, and larger units.

b. In conducting a map exercise, the instructor presents a series of situations with their accompanying requirements. The students, acting as commanders and staff officers, solve the requirements by making estimates and decisions and by preparing plans and orders to implement them. The students solve the requirements individually, as members of designated groups, or as unit commanders and staffs. They present and discuss several of the solutions to each requirement. The instructor then presents a solution that provides a basis for the solution of subsequent requirements.

14. Map Maneuver

a. A map maneuver consists of presenting a military situation by outlining it on a map or overlay and stating requirements that call for estimates, decisions, plans, and orders by the players acting as commanders and staff officers. The sequence of command and staff actions in making and executing decisions is employed (FM 101-5). The situation is progressive or developmental, depending on whether it presents successive steps or different aspects of an operation.

b. Map maneuvers are free or controlled, one-sided or two-sided. The controlled map maneuver is conducted according to a preconceived plan of action for one or both sides; controllers force the play of the problem to follow this plan. The free

map maneuver places no restrictions on the actions of the opposing forces. They are free to follow any course of action desired within broad limitations of zones of action. Umpires represent the units, both friendly and enemy, that are not represented by players.

c. A map maneuver may be conducted as a continuous exercise or divided into phases to correspond with the requirements placed on the players. The breaks are used by controllers to war game the outcome of player decisions, actions, and orders. Players may continue with their normal work while the controllers are thus occupied. These two methods of conduct also apply to other types of tactical exercises.

d. The map maneuver provides the most realistic approach to combat that can be obtained by artificially providing players with an active enemy and a changing situation. It is suitable for training large numbers of officers and requires no limitations of safety zones, private property, or understrength units, which sometimes detract from field training. It offers a broad field for selection of terrain to fit any type of problem since any terrain can be used if suitable maps are available.

15. Command Post Exercise

a. A command post exercise is a field exercise for command, staff, headquarters, and communication personnel at all levels. All troops other than headquarters and communication personnel are represented by umpires. The enemy may be represented by umpires. This exercise permits command and staff personnel to apply their knowledge of correct command and staff procedures to a wide variety of tactical situations.

b. Command post exercises provide a valuable vehicle for training in displacement of headquarters; the use of staff procedures, techniques, and standing operating procedures; use of alternate or fragmented command post echelons; maintenance of command and control under adverse conditions; and rehearsals for field exercises and maneuvers.

c. Command post exercises afford commanders a valuable training device in the area of combat service support. Activities of the combat service support system, especially in the areas of staff coordination and staff direction, are planned and examined for feasibility. In comparing the command post exercise and the field exercise, the control system for the former is smaller and it can assume more realistic conditions unhampered by artificial restrictions during the play.

d. Command post exercises may vary in form. At one extreme is the form which resembles a map maneuver in which only key staff personnel participate. Fewer communication facilities are provided and the command posts are grouped in one location or at reduced distances. At the other extreme is the form which closely simulates combat. Here the command posts are separated by normal distances and enough headquarters and communication personnel are employed to locate, install, and operate the command posts as in combat (normal distance). Command post exercises may be one-sided or two-sided. Umpires represent friendly and enemy units that are not represented by players.

16. Field Exercise

a. A field exercise is a tactical exercise conducted under simulated combat conditions. The personnel and equipment of the friendly side are present on the ground in whole or in part while the personnel

and equipment of the opposing side may be represented or simulated.

b. The field exercise is used to train units of all sizes. It is also used to test units, commanders, and staffs. A procedure for preparing field exercises for company and smaller units is outlined in paragraphs 29 through 38. A procedure for battalion and larger units is outlined in paragraphs 44 through 61.

17. Field Maneuver

A field maneuver is a tactical exercise in which a military operation is conducted; troops and armament of both sides are present in whole or in part. All the conditions of war are simulated. The maneuver is extensive in scope and time, with logistical depth often extending beyond the field army rear boundary into the theater administrative zone. It involves multiphase tactical problems in which more than one division normally participates and requires extensive movement in relatively large areas.

Section III. SEQUENCE AND SELECTION OF EXERCISES

18. Sequence

Tactical exercises are programmed to follow one another in logical sequence to provide progressive training. For example, a small unit undergoes a series of small unit field exercises before participating in a large unit field exercise. It may then progress to a field maneuver. This orderly progression avoids confusion, misunderstanding, and the learning of incorrect procedures and techniques of combat.

19. Purpose

The first consideration in selecting the type of tactical exercise is whether the training is for individuals or units. If it is for individuals, a map exercise may be appropriate; if for a headquarters or a unit, a command post exercise or field exercise can be scheduled. The type of training to be conducted is determined by considering the status of training, the training that is to be emphasized, and current training directives.

20. Status of Training

The proficiency of the individuals or unit to be trained is a determining factor, not only in the type of exercise to use, but also in its complexity. For example, there is no definite or scheduled time that a field exercise will be injected into the basic unit phase of training. It is programmed as soon as the status of training of small units permits it. The

teamwork and training of a staff may require that it participate in a series of map maneuvers before taking part in a command post exercise or a large unit field exercise. Under the same reasoning, the working knowledge of staffs should be verified by command post exercises before they are required to direct the operations of entire units in large unit field exercises or field maneuvers.

21. Terrain Available

The terrain available is a deciding factor in determining the size of the unit that will participate in a field exercise or field maneuver. When the type or extent of terrain that is needed to properly emphasize the desired training objectives is not available, a terrain substitute such as a terrain model may be employed. A commander desiring to provide training in jungle operations may schedule map exercises and a map maneuver because of the lack of suitable terrain.

22. Time

Enough time must be allowed for preparation of tactical exercises to permit accurate and logical presentation. The time allocated for the conduct of the exercise must permit realistic development of situations that lead to logical conclusions. All exercises should encompass a complete operation or a distinct phase of an operation.

23. Equipment

Umpires and controllers require adequate communication with the chief umpire or controller, the participating units, and each other. Since the participating units need all their organic equipment, the equipment used by control personnel should come from other sources. This becomes a major consideration when a large amount of equipment for use in umpire and control activity must be obtained and returned in a short time.

24. Control Personnel

Efficient control is essential to the success of any tactical exercise. When planning a tactical exercise, it is necessary to consider the need for and the availability and qualification of umpire and control

personnel. The number and qualification of umpire and control personnel may determine whether an entire unit can participate in an exercise, or whether a series of smaller unit exercises is more practicable. A small unit exercise can be prepared and conducted by one individual using only visual signals for control. A field maneuver may require hundreds of men and elaborate communication facilities in the umpire and control system.

25. Funds

Special field exercise funds are budgeted and allocated for expenses above normal training costs. These funds are not available to cover any and all types of expenses incident to field training. See AR 220-55 for a detailed explanation regarding exercise funds.

CHAPTER 3

DEVELOPMENT OF TACTICAL EXERCISES FOR SQUAD, PLATOON, AND COMPANY

Section I. INTRODUCTION

26. Scope

This chapter describes the exercises most often used to train the squad, platoon, and company. It prescribes a step-by-step process for the development of the field exercise and points out the variations in developing other exercises commonly used. In general, however, all tactical exercises for the squad, platoon, and company are developed in a similar manner.

27. Realism

a. Soldiers learn best by doing. For this reason, training doctrine emphasizes that theory must give way to practical exercise as quickly as possible.

b. In the tactical training of individuals and units, situations are used that may arise in combat. Constant attention is given to the use of covered routes, individual cover and concealment, response to orders and signals, movement to and occupation of positions, the reporting of intelligence information, changing positions, advancing by bounds, the technique of fire, the employment of supporting weapons, and taking full advantage of the effects of supporting weapons. Consideration is given to the confusion and uncertainty that can develop in a changing situation—noise, discomfort, lack of time, fatigue, sketchy and false information, and lack of instruc-

tions. Care must be taken to have combat missions executed by applying correct tactical principles, and not by following arbitrary rules. Decisions are made and action is taken only after careful consideration of the mission, terrain, weather, enemy, and other variables affecting the situation. Soldiers must be conditioned for battle mentally as well as physically. Training must be so realistically designed and conducted that a unit or individual will not find the noise and confusion of battle a strange experience when introduced to combat for the first time.

28. Preparation and Control

A tactical exercise for the squad, platoon, or company is usually prepared by one individual. During normal training situations, this individual is appointed by the next higher echelon of command. Ideally, exercises for Army training tests are planned at a level two echelons higher than the unit being tested. The individual preparing the exercise is normally the chief umpire for the exercise. He requires a number of assistants to control the exercise and to evaluate the performance of the participating unit. Depending on the complexity of the exercise, it may be advisable to designate more than one individual to prepare a company exercise.

Section II. DEVELOPMENT OF A FIELD EXERCISE

29. General

a. The field exercise is conducted on the ground rather than on a terrain substitute. For this reason, time and space factors are accurately represented. The exercise is an excellent means of training the squad, platoon, and company. In the progressive scheme of tactical training for these units, the field exercise is employed after the unit has demonstrated a satisfactory degree of proficiency during terrain model and tactical drill exercises.

b. The field exercise is a tactical exercise commonly used throughout the Army because of its versatility. Units of any size can participate in the exercise. Units and their leaders can be tested to determine their ability to employ correct tactical principles and techniques and combat service support under realistic combat conditions. Since troops are actually operating on the terrain according to true time and space factors, the effectiveness of new organizations and the serviceability of new items of equipment can

be tested. Through the use of a well-controlled Aggressor force and a properly organized exercise area, it is possible to accomplish specific training missions.

c. This section, supplemented by appendix II, prescribes the steps involved in the planning, preparation, and conduct of field exercises for the squad, platoon, and company.

30. Directive

a. *Definition.* A directive is an oral or written military communication in which a policy is established or a specific action is ordered. The issue, receipt, and study of the directive constitute the first step in the planning of the exercise. A directive requiring the development of a tactical exercise may be issued by any authorized person or headquarters in the chain of command. At company level a directive is normally issued orally. A clear understanding of the directive is essential because it contains the planning guidance that is the basis for the planning and preparation of the exercise. Any information not provided must be deduced, or it must be requested by the officer who plans the exercise. A directive may contain many different items of information, depending on the desires of the commander issuing it and the local training situation. As a minimum, it should contain the items mentioned in b through f below.

b. *Purpose.* The purpose of the exercise describes the training to be accomplished, such as practice in combat formations, assault, and reorganization. These are the areas in which the person issuing the directive desires training to be accomplished. These are the training objectives that will be emphasized during the conduct of the exercise.

c. *Type of Training.* This explains the type of tactical operation to be conducted to attain the training objectives. It may specify the attack, defense, or a retrograde operation. It will further specify a particular type of attack or defense such as the infantry-tank team in the attack or the defense of a river line. It will specify whether the operation is to take place during daylight or darkness and whether service ammunition, blank ammunition, or no ammunition will be used.

d. *Time and Place.* This portion of the directive designates the terrain area allocated for the exercise. It is normally supplemented with a map or overlay showing the area to be used. This portion further specifies certain time factors governing the planning, preparation for, and conduct of the exercise. It may establish the amount of time available for each unit

to participate or a block of time during which a specified number of units will be conducted through the exercise. It also establishes a planning deadline for the officer preparing the exercise.

e. *Units to Participate.* This item of information prescribes the type and number of units that will participate. For instance, the exercise may be prepared in order to train all weapon squads of the rifle company or to train all rifle platoons of the battalion.

f. *Special Equipment.* In many instances, such as the attack of a fortified position, a night raid, a helicopterborne or airborne assault, the use of special equipment is required. The directive identifies the type and amount of special equipment available for the exercise.

31. Research

a. Organization, weapons, and equipment are changed to meet the demands of changing tactical doctrine and capabilities. For this reason the officer planning the exercise must research pertinent material to insure the authenticity of the exercise. His research must be thorough enough to provide him with the necessary background to place the exercise in a realistic combat environment and command the interest and enthusiasm of the participants. To accomplish this, the officer planning the exercise should consult such tactical references as field manuals, subject schedules, training films, service school publications, and copies and reports of exercises previously conducted that are available in unit files.

b. The author should consult administrative references to insure the uninterrupted progress of the exercise and to preclude injuries during the training. Some administrative references pertinent in all cases are post and garrison regulations, range regulations, and unit SOP's. Occasionally, Army and special regulations will apply.

c. In his research and planning, the problem author draws on his own experience as well as that of others in an effort to make the exercise as realistic and authentic as possible.

32. Reconnaissance

a. To make the most efficient use of the area allocated for the exercise, the preparing officer must plan and conduct a thorough reconnaissance. This reconnaissance should consist of first a map and then a ground reconnaissance.

b. To save time and effort during planning and preparation, the author should first study a map or aerial photo of the area for the exercise. In doing so,

he analyzes the area to determine its military aspects, including observation and fields of fire, cover and concealment, obstacles, key terrain, and avenues of approach. If the exercise is offensive by type, he starts by choosing the unit objective. He then plans backward, choosing a possible assault position, line of departure, assembly area, and other control features normally used in the attack. He selects additional locations of Aggressor activities or positions where specific actions are to take place. If the exercise is defensive by type, he starts by choosing the main battle area, locations for security elements, routes of approach to the defensive positions, location of the reserve, if applicable, and assembly areas. Next, he selects installations such as roadblocks, locations for road guards, wire heads, and visitor control points. In plotting map locations for Aggressor units and activities, the color red should be used; for friendly units and activities, blue is used. For installations, black is the color. These positions are plotted on the map, using a series of letters and numbers which are carried over to the margin and explained in a legend. This is an aid which avoids cluttering the map, especially if the problem author wishes to prepare more than one tentative plan for conducting the exercise. Since this method of organizing the exercise area is for

the author's own use, it is not necessary to use orthodox overlay techniques at this time. When this has been accomplished, the overall scheme of operation is determined by visualizing the employment of the parent unit two levels of command higher than the unit to participate. In the case of a squad exercise, the employment of the other squads in the platoon and the other platoons in the company must be determined. The officer preparing the exercise must bear in mind that, in selecting the locations for activities, he is limited to the area designated for the exercise. See figure 1 for an example of the organization of an exercise area.

c. The author makes a ground reconnaissance to verify the tentative plan he has prepared from his map reconnaissance. His plan will need only minor changes if his map reconnaissance has been thorough. In making the ground reconnaissance, he again checks his plan backward from the objective which he first located. He verifies that the objective is appropriate for the type of units to participate. While on the objective he critically examines the terrain, as would the enemy commander, to determine the realistic locations of activities to take place. He then walks through the remaining portion of the area, determining the realistic location and feasibility of the other features he has selected. He

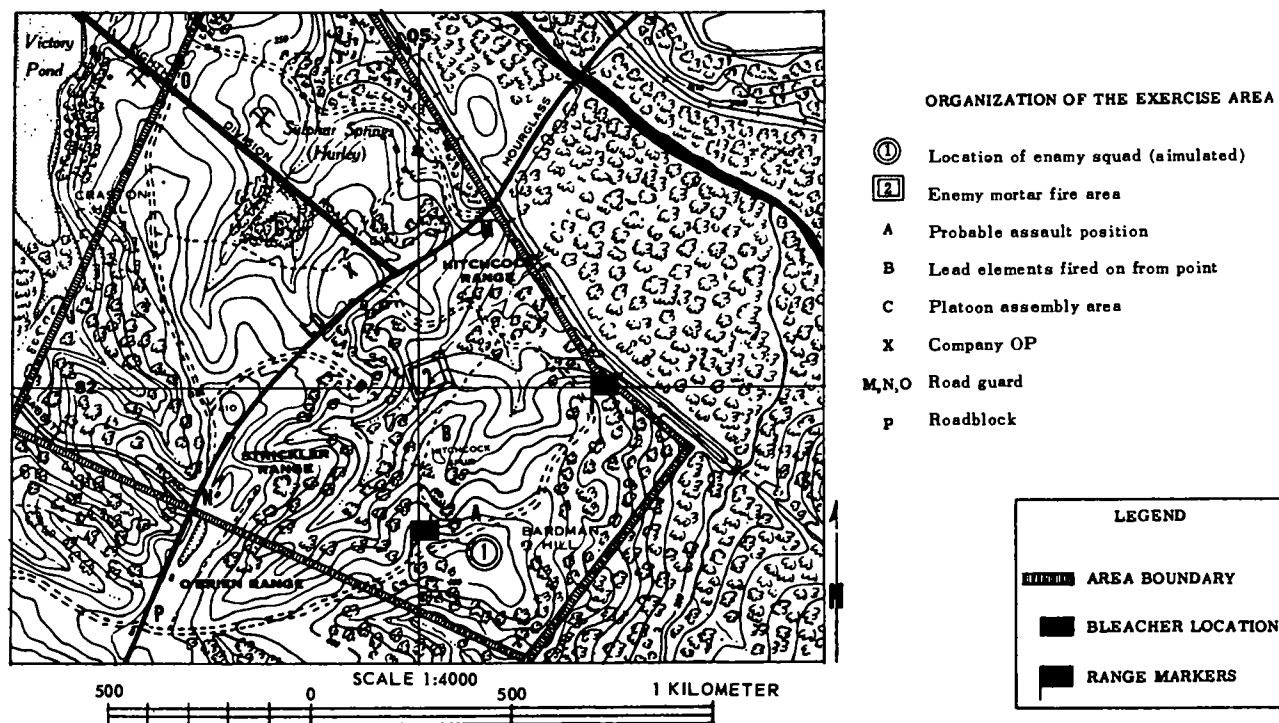


Figure 1. Hitchcock range area map.

changes his original plan as necessary and, before continuing his planning of the exercise, submits it for approval to the individual who originally directed that the exercise be prepared.

33. Scenario

After completing the steps described in paragraphs 29 through 32, the author writes the scenario (the story of the exercise). The scenario portrays a series of situations that will provide the training required by the commander's directive. The scenario is written to guide control and Aggressor personnel so that they may cause the exercise to progress according to the predetermined plan. It is composed of four parts: *a general situation; an initial situation and requirement; subsequent situations and requirements; and the time schedule.*

a. General Situation. The general situation provides the participants with the tactical background normally available in a tactical situation. Depending on the officer preparing the exercise and the conditions under which it is to be conducted, many items may be included in the general situation. As a minimum, it should—

- (1) Describe the situation of both friendly and enemy forces. The description of the enemy situation includes comments that create a realistic background for the exercise. The situation of the friendly forces two echelons higher than the participating unit is explained. This means that, for a platoon exercise, the situation of the battalion is explained.
- (2) Explain the location of the unit on the ground and its relation to adjacent units. Adjacent units are limited to those whose activity will be easily understood by the members of the participating unit. For example, if the unit participating is a platoon, refer to adjacent platoons and companies. Realism is lost if the participating unit is placed in contact with the enemy at the time the exercise begins because the unit would have to be moved into its initial positions administratively. To start the exercise, the unit should be so placed that it has to move tactically to gain contact with the enemy.
- (3) Explain the activities of the participating unit during the preceding 24 to 48 hours. This explanation should include sufficient reference to the unit's prior mission to lead

logically into the mission the unit will receive for the exercise.

- (4) Specify the location of the unit leader if he is not with the unit when the general situation is issued. Normally, he will be at the next higher unit command post or observation post receiving the order when the unit is receiving the general situation. If he is with the unit at the time the general situation is issued, no mention need be made of his location.

b. Initial Situation and Requirement.

- (1) The initial situation starts the action by the unit participating in the exercise. It is designed so that a logical solution to it will start the exercise along the desired lines. The situation is described in enough detail to give the unit and its leader a complete mental picture of it. Any tactical situation that requires action on the part of the unit may be used as an initial situation. However, for the squad, platoon, and company, a fragmentary or operation order issued by the next higher unit commander is normally used to begin the action. When an operation order is used, it should be complete, covering all five paragraphs and referring to the missions of all subordinate units in the parent unit as if they were also participating in the exercise. The use of an extract or fragmentary order may result in a loss of realism. The order should be issued under tactical conditions at a location such as the command or observation post.
- (2) The first requirement follows the initial situation. It is a statement outlining the *expected* orders and actions of the participating unit and its leader as a result of the conditions confronting the unit in the initial situation. The correct orders and actions are based on previous tactical instruction. The requirement is a guide for control personnel only in observing and evaluating the actions of the unit. The requirement is broken down in detail in the umpire checklist prepared by the officer writing the exercise. It indicates to the assistant umpires specific actions to be observed and reported.

c. Subsequent Situations and Requirements. The initial situation seldom provides training in all the training objectives outlined in the directive. The

officer preparing the exercise creates subsequent situations to accomplish all of the desired training and to provide interest and continuity in the exercise. Subsequent situations also cause the exercise to develop logically and depend on the type of operation involved. In writing them, the author includes sufficient detail to properly direct control personnel in the performance of their duties. To provide this direction, subsequent situations should include a written portrayal of the following:

- (1) What action is to occur.
- (2) When the action takes place.
- (3) Where the action takes place.
- (4) Who is involved in the action.
- (5) How the action is presented.

Guided by this information, control personnel are able to properly portray each situation to the participating unit during the exercise. Following each subsequent situation is a requirement which must be fulfilled by the participating unit or its leader.

d. Time Schedule. The final portion of the scenario is the time schedule. It is an estimate of the amount of time required to conduct one unit through the exercise, including time for the troop orientation at the beginning of the exercise and a critique at the end of the exercise. This time estimate will be more accurate after the rehearsal of the exercise has taken place. However, it should be understood by the officer preparing the exercise and his assistant control personnel that no two units will require exactly the same amount of time to complete the exercise. No attempt should be made to require them to do so. This time estimate is for planning purposes only (ex. 2, app. II).

34. Control

a. General. Control measures are incorporated to provide for the efficient conduct of the exercise. This is the plan for placing the exercise on the ground and causing it to progress as planned. In it, the problem author anticipates and solves the problems that may arise while conducting the exercise. The chief umpire will need assistants for this exercise; therefore, the officer preparing the exercise includes specific instructions for them in the control plan.

b. Umpires. Normally, the officer who prepared the exercise acts as the chief umpire. He selects assistant umpires and outlines specific instructions for them. (Part II of this manual contains a discussion of umpire duties.) He considers the following when planning for his assistants:

- (1) *Number required.* Number of umpires required to effectively control the exercise.
- (2) *Uniform and identification.*
- (3) *Equipment.* Equipment other than regular individual equipment, such as communication equipment needed for the exercise.
- (4) *Duties.* He outlines the tasks delegated to assistants, provides instructions for doing them, and assigns responsibility.

c. Road Guards.

- (1) *Number and location.* While making his ground reconnaissance, the problem author determines the number of road guards required and their location. He includes this information in his control plan. Since the road guards receive no training, the number used is kept to a minimum. Roadblocks are used in their stead whenever possible.
- (2) *Uniform and identification.* The road guards may wear the same uniform and identification as umpire personnel.
- (3) *Equipment.* Items of individual equipment not needed by the guards in performing their assigned tasks are kept to a minimum. In addition to their individual equipment, guards must have a means of communicating with the chief umpire.
- (4) *Duties.* The author designates definite times and circumstances under which road guards will permit nonproblem traffic to move into or through the exercise area and outlines the procedure for directing visitors into the area.

d. Communication. The author provides for a primary and an alternate means of communication for control personnel. He designates the individuals to be provided with radio communication and determines the location of telephones.

e. Troop Orientation.

- (1) *Responsibility.* The assistant chief umpire normally orients the unit.
- (2) *Time and location.* The unit is oriented in the exercise assembly area just before the exercise begins.
- (3) *Scope.* The orientation should include the purpose of the exercise, an explanation of the training objectives, how the exercise will emphasize these training objectives, the identity of umpire and control personnel, and the safety instructions.

f. Safety.

- (1) *Personnel.* The danger involved in an exercise determines whether personnel other than umpires are necessary. Unit safety regulations, range regulations, or SOP's may prescribe definite conditions under which safety personnel will be used.
- (2) *Uniform and identification.* Safety personnel wear the same identification as umpire personnel.
- (3) *Equipment.* Safety personnel have the equipment needed to cope with an emergency. They have radio communication with all umpire personnel and a visual signaling device to stop the exercise in the event of extreme danger or emergency.
- (4) *Duties.* The author prescribes definite duties for safety personnel. He gives the safety officer the responsibility for displaying the range flag, posting road guards, determining the presence of roadblocks, and posting the area as a danger area.
- (5) *Safety rules.* The author prescribes specific safety rules for the exercise and includes them in the troop orientation. He does not relieve the unit leader of his command responsibility for safety.

g. Enemy Representation and Target Detail.

- (1) *Aggressor.* The author determines the number of Aggressors needed, their uniform, identification, and duties. Aggressors are used habitually. If Aggressor uniforms are not available, substitutes can be improvised from salvage materials. For a discussion of the Aggressor Army, see FM 30-101, FM 30-102, and FM 30-103.
- (2) *Target detail.* The author prescribes the size, uniform, and duties of the target detail when service ammunition is fired.

h. Critique.

- (1) *Location and time.* The chief umpire conducts a critique for the unit at a spot where they can see all or a major part of the exercise area. The objective is an ideal location. The critique immediately follows the exercise while it is fresh in the soldiers' minds.
- (2) *Speaker.* Normally, the chief umpire conducts the critique and is the only speaker. He encourages discussion but does not permit arguments.

- (3) *Personnel present.* All umpires and the unit attend the critique. The chief umpire may conduct a separate critique for control personnel.
- (4) *Scope.* The chief umpire restates the purpose of the exercise, reviews each situation, and explains the training objectives emphasized. He mentions the good and bad points observed during the exercise, and suggests how the unit can improve its proficiency (ex. 3, app. II).

35. Administration

The problem author plans for the accomplishment of administrative details associated with the field exercise. The administrative plan provides for the dissemination of required information to participating units and for obtaining the necessary personnel and equipment to support the exercise. This information is usually published in the form of a unit order (company level) or a training memorandum. Preparation of the various portions of the training memorandum is the responsibility of the appropriate staff officers in the headquarters which initiated the directive. However, the problem author furnishes the necessary information for each portion. The unit order or training memorandum is paragraphed to state the following—

- a. Purpose.* A restatement of the purpose of the exercise as given in the directive.
- b. Reference Material.* A list of references pertinent to the subject and of interest to the students.
- c. Schedule.* A schedule for the rehearsal as well as the date and time for the units to participate.
- d. Troop Orientation.* The time and place of the troop orientation and its scope.
- e. Control Personnel.* A list of the personnel who are to assist in the exercise, to include enemy representation or a target detail if service ammunition is to be used.

f. Administrative Details.

- (1) The time and place the units are to report and the starting time of the exercise.
- (2) Route to the exercise area.
- (3) Uniform and equipment for the participants.
- (4) Transportation for control personnel and the unit.
- (5) Communication equipment and supplies for control purposes.
- (6) Evacuation plan and list of personnel and equipment to be furnished for medical support.

36. Terrain Preparation

Preparation of the terrain is necessary to provide a realistic combat environment. The problem officer accomplishes this by requesting work details for construction needed in the exercise area. If he is preparing the exercise by direction of the battalion commander, other battalion units may assist in this work. If it is to be a live fire exercise, he makes use of electrically or mechanically controlled targets installed in foxholes or bunkers to represent the enemy. He may choose to install a dug-in, remotely controlled machinegun to represent enemy fire from the objective. If it is to be a blank fire exercise, he may install barbed wire obstacles on the objective, demolition pits along routes of approach to the objective, or other safety devices to facilitate control and safe operation during the exercise. These projects require a considerable amount of coordination on the part of the officer preparing the exercise, but are necessary to provide realism.

37. Rehearsal

The officer preparing the exercise rehearses the exercise as a final check on his plan. He conducts the rehearsal well in advance of the scheduled exercise so he will have time to correct any errors and readjust the time schedule. He rehearses the umpires and Aggressor detail first, repeating the rehearsal as necessary so that everyone is thoroughly familiar with his duties. He follows this with a full scale rehearsal, using a practice unit. The individual who originally directed that the exercise be prepared should be present at the rehearsal to make any changes he feels necessary or to give his approval of the field exercise.

38. Conduct

a. General. The success or failure of an exercise depends largely on the initiative, ingenuity, energy, and enthusiasm of the chief umpire and his assistants. They should supervise the exercise in a professional manner, from the orientation through the critique.

b. Orientation. The assistant chief umpire arranges to meet the unit at the detrucking point and guide it into the assembly area. He presents the orientation as soon as the unit arrives in the assembly area.

c. General Situation. Immediately following or during the unit orientation, the chief umpire takes the unit leader to the observation post and issues the general situation. At the same time the assistant chief umpire issues the general situation to the unit in the assembly area. Upon receipt of the general situation, the exercise becomes tactical.

d. Initial Situation. The parent unit commander (chief umpire) issues the initial situation to the participating unit leader at a tactical location under tactical conditions, normally at an observation post. The chief umpire should remain with the unit leader to observe his actions and listen to the orders he issues. The actions of the entire unit are then observed during the initial phases of the exercise.

e. Subsequent Situations. A logical solution of the initial situation will start the exercise along desired lines. At the appropriate time, the actions portrayed in the subsequent situations, prepared as part of the scenario, are presented. During the presentation of all situations, the umpires must remain as tactical as possible. They station themselves in positions to best observe the leaders and other members of the unit. Normally, the chief umpire remains with the unit leader. All umpires must be prepared to assist in control and cause the exercise to develop along the desired lines. In the event a decision made by the unit leader threatens to seriously disrupt the exercise, the umpires realistically bring the play back to the desired plan.

f. Critique. At the conclusion of the chief umpire's critique, the unit is turned over to the leader, who may then critique his unit. The chief umpire may conduct a critique for the personnel who assisted in the conduct of the exercise. A summary of the observations and comments made by the chief umpire are sent through command channels to the unit leader. The summary is based on the umpire check lists and the critique.

Section III. OTHER TACTICAL EXERCISES

39. Terrain Model Exercise

When time or training facilities limit or prohibit the use of the ground, a sandtable or terrain model is used as a terrain substitute. Either may be used as a training aid for a conference, demonstration, or an applicatory exercise for units or individuals. Their use is not restricted to small unit training. They may be used at all levels and during all phases of training to teach new lessons, re-emphasize lessons already taught, to critique a completed operation, or as an aid to briefings on planned operations. They are particularly valuable training aids for teaching basic tactical principles. A sandtable or terrain model exercise may be used during the early part of the basic unit phase of training to prepare the unit for a field exercise. The steps in preparation of the sandtable exercises are identical to the procedure prescribed for the field exercise with the following variations:

a. During the reconnaissance, the officer preparing the exercise normally conducts a map reconnaissance only. After organizing the exercise area on the map, he then constructs the sandtable or terrain model and the necessary accessories.

b. The problem of control is reduced since the instructor is able to control the exercise by limiting the number of participants.

c. The administrative and logistical support required for this exercise is greatly reduced.

d. A rehearsal with a practice group is conducted whether the instructor intends to use assistants or not.

e. The instructor starts the exercise by orienting the unit or student group. The orientation includes the purpose of the exercise, how the sandtable will be used and the method of representing enemy and friendly forces on it, an explanation of the terrain represented and its prominent terrain features, and an explanation of the scale to be used for the exercise. The instructor then presents the general and initial situation. The students are allowed a few minutes to study the initial situation before the requirement is explained. Each student prepares his own solution to the requirement. The instructor has one student present his solution which the instructor then discusses. He may ask for and discuss additional solutions. When the instructor is satisfied that a training objective has been properly emphasized, he proceeds to the next situation and follows the same procedure. When all the situations have been presented and various solutions to all

the requirements have been discussed, the instructor conducts a critique and summarizes the lessons learned.

40. Terrain Exercise

a. Officer and noncommissioned officer schools should be scheduled to supplement daily training requirements. The terrain exercise is an excellent means of providing unit leaders with additional training in tactics and logistical procedures during combat operations.

b. The terrain exercise is developed in the sequence of steps prescribed for the field exercise, with the following variations—

- (1) Preparation of the terrain takes on a slightly different aspect. In the field exercise, such projects as digging foxholes, constructing bunkers, digging demolition pits, and erecting obstacles of various types are accomplished in an effort to prepare the terrain for the conduct phase. In the terrain exercise, such projects as clearing pathways for fields of vision, erecting panels to designate limiting points and objectives, and clearing roadways for transportation of student groups are accomplished for the efficient conduct of the exercise.
- (2) The instructor orients the student group or unit on the terrain, pointing out its prominent features and explaining their relation to the exercise. He then presents the general situation, followed by the initial situation.
- (3) The students should be issued a terrain sketch as an aid to solving requirements. This insures that solutions are a result of a ground reconnaissance rather than the result of a study of a topographical or aerial photomap. The instructor tells the students when the requirements are to be completed and where the students will reassemble to present their solutions and receive the next requirement. After each requirement has been completed, the instructor starts subsequent situations with an orientation on the terrain and the present dispositions of friendly and enemy forces. During the practical exercises, the instructor and his assistants make themselves available to the students for advice and counseling.

CHAPTER 4

DEVELOPMENT OF TACTICAL EXERCISES FOR BATTALION AND LARGER UNITS

Section I. GENERAL

41. Objectives

a. The field exercise and field maneuver are the principal vehicles for training individuals and units in advanced tactics. Commanders and staffs derive their supplementary advanced training through map exercises, map maneuvers, and command post exercises. This chapter prescribes procedures for planning, preparing, and conducting tactical exercises most appropriate to advanced unit training at battalion and higher levels of organization.

b. The objectives of all types of tactical exercises at battalion and higher level are—

- (1) The integration of the organic staffs and units into coordinated and efficient teams capable of successful action in combat.
- (2) The attainment of a high degree of unit and individual proficiency in tactical and logistical operations.
- (3) The advancement of training of troops, units, commanders, and staffs.

c. Tactical exercises at battalion and higher levels are an advanced phase of training. Individuals, units, commanders, and staffs take part in them only after they have attained a reasonable degree of proficiency in smaller unit tactics.

42. Staff Coordination

It is unrealistic to charge one individual with the preparation of a large unit tactical exercise that requires advanced tactical play as well as combat service support. A directive to prepare a larger unit tactical exercise is issued to an individual who has a

unit or general and special staff to assist him. While the individual assumes responsibility for the full preparation of the exercise, his staff members are responsible to him for the preparation of various portions of it. The individual preparing an exercise for a squad, platoon, or company receives staff support from the higher echelon, whereas at battalion and higher levels there is actual staff participation in the preparation of the exercise.

43. Realism

a. Tactical exercises are conducted with as much battlefield realism as the planners can devise. Realism is gained by the use of well-controlled Aggressor elements, using a 1-to-1 time ratio during the exercise, playing space and movement according to true time-distance factors, and by maximum integration of all unit and individual training accomplished prior to the exercise.

b. All types of weapons and equipment and the latest military technology for both friendly and enemy forces, including all recently developed specialties, should be integrated.

c. Tactical training should require the simultaneous employment of all combat, combat support, and combat service support components of the unit.

d. In combat, the feeling of acting against time, strained nerves, meager or vague information, delayed orders, physical discomfort, noise and fatigue, all can be expected. A realistic exercise embodies these and many other elements during the conduct phase.

Section II. FIELD EXERCISES

44. General

a. Battalion and larger unit field exercises are used during more advanced phases in the progressive scheme of military training. They are designed not only to provide practical application of current doctrine under realistic combat conditions, but also to test the soundness of the doctrine itself. In many instances the exercise will be designed to test the effectiveness of a certain combat service support procedure, the organizational structure of a certain type of unit, or the serviceability of certain types of equipment. In many cases the unit and its commander are being tested, such as during an Army training test.

b. The development of an exercise for a battalion, brigade, division, corps, or field army follows the same basic sequence as that described in this section. But, as the number of troops participating in the exercise increases, so do the ramifications of planning, preparing, and conducting the exercise. Appendix III provides a guide for the preparation of a large unit field exercise.

c. The requirement to plan and provide support for the tactical exercise of a command alone generally provides insufficient play for combat service support players, particularly at higher echelons. This deficiency may be overcome by planning situations that simulate damage and interrupt or interfere with the combat service support system. Additionally, players may be exercised in situations or conditions that require contingency planning and planning for future operations.

d. The objectives of combat service support play fall into three general categories—

- (1) The capability and adequacy of the combat service support system to support player operations in nuclear, nonnuclear, and special operations.
- (2) The necessity for adopting or changing the existing or peacetime combat service support system to wartime or combat conditions. This includes dependence on local support and the activation, mobilization, and absorption of additional combat service support units.
- (3) The capability of the combat service support system to adapt to rapidly changing support requirements.

45. Task Responsibilities

a. An exercise director is appointed to develop a

larger unit exercise. His G3 assumes the major portion of the staff responsibility for preparing the exercise. The general staff designation is used in this section when referring to staff members. However, it should be remembered that the statement applies equally to the counterpart on the unit staff or on a director staff.

b. The senior participating staff may plan, prepare, and conduct the exercise when the primary objective is to train the subordinate units. When a particular headquarters is to participate in the exercise as the highest echelon involved, realism is increased if another (normally the next senior) headquarters plans and prepares it. If the next senior headquarters is not available, then a temporary staff may be drawn from the participating staff with the sole mission of planning, preparing, and conducting the exercise. This can be accomplished in a number of ways. The principal member of each staff section may perform as the principal staff section member on the staff of the exercise director. This causes the most experienced staff members to plan and prepare the exercise and provides the assistant participating staff section chiefs with the opportunity to perform the duties of the participating staff section chief. If this arrangement is not feasible, the assistant staff section chiefs may function as the exercise director staff section chiefs. This allows the most experienced staff members to carry on normal duties and prepare the unit for the exercise, and provides training for the assistant participating staff section chiefs in planning and preparing the exercise. As an alternative to these methods, an exercise director staff may be formed from outside sources to plan, prepare, and conduct the exercise. The first two methods should be used alternately for maximum training benefit. When participating in normal training under an ATP, a higher headquarters is usually not available and one of these three methods is used. However, when units are participating in Army training tests a higher headquarters should plan and prepare the exercise.

c. The staff responsible for the development of a field exercise follows a sequence of tasks in planning and preparing it. On receiving the directive, the G3, in coordination with the other staff sections concerned and the chief umpire/controller or director—

- (1) Studies the directive and determines the general nature of the exercise to be conducted.

- (2) Selects and reviews pertinent references.
- (3) Prepares and distributes a planning schedule.
- (4) Makes a map reconnaissance of the area allocated for the exercise in order to formulate an outline plan.
- (5) Confirms the outline plan by making a ground reconnaissance.
- (6) Prepares a draft of the exercise scenario containing all situations, requirements, and the time schedule.
- (7) Prepares the operation order with appropriate annexes. When approved, this operation order will be issued to the participating units to initiate play.
- (8) Prepares the orientation and critique plan for the exercise.
- (9) Prepares the training memorandum to support the exercise.

d. The G3 prepares the troop list, which identifies the units participating in the exercise and those in the support organization. If simulated units are played, they are shown in the troop list for player planning purposes. This portion of the plan also prescribes the control organization. The organization and manning of the exercise planning staff and the control staff are included in the troop list.

e. When the scenario has been completed to the satisfaction of all staff sections and approved by the responsible commander, the appropriate staff sections can begin work on their portions of the supporting plans and instructions.

f. The G1 consults with the G3 and the chief umpire/controller on umpire and control requirements. He prepares the personnel paragraph of the administrative order and provides the G3 with the name, rank, and organization of all personnel who have a part in presenting the exercise. He also prepares the personnel portion of the administrative plan for the exercise. See paragraph 54.

g. The G2 studies the directive, appropriate references, and the scenario and prepares a series of enemy situations to guide the exercise along the lines intended. He reconnoiters the terrain to verify that his enemy situations are workable. The G2 consults with the chief umpire/controller, the G3, and the Aggressor force commander to obtain concurrence on the information concerning the enemy situation to be released to the troops, and to plan the methods of releasing this information so that the units will get maximum combat intelligence training. The G2 then prepares the intelligence plan to consolidate all

aspects of intelligence play in the exercise. See paragraph 52 for the content of the intelligence plan.

h. The G4 studies the directive, appropriate references, the scenario, and the operation plan and consults with the individuals and agencies that will support the exercise. He plans for playing logistical aspects of combat service support during the exercise. This includes provisions for establishing complete or skeleton installations, incorporating actual resupply where feasible, and simulating physical quantities and weights where the actual supplies cannot be carried into the field. He also plans for the *actual* support of the exercise based on requirements for ammunition, field rations, fuel, pyrotechnics, and any special equipment, as well as medical evacuation and traffic control. The G4 drafts the administrative plan and reconnoiters the terrain to make sure the plan is workable. He consults with the G3 to make sure it conforms to the operation plan, the control plan, and the troop orientation and critique plan.

i. The G5 studies the directive, appropriate references, and the scenario and prepares the civil affairs plan and pertinent portions of the operation and administrative plans. He coordinates with all other staff agencies to insure that the civil affairs plan conforms to the operation plan, control plan, administrative plan, and the troop orientation and critique plan.

j. The chief umpire/controller (or the G3 if he has been given this staff responsibility) designs the umpire and control system, including the number required and their assignments, the equipment required, the communication system, command structure, and the reporting and scoring procedures to be followed. He prepares instructions for the umpires and controllers to assist them in the problem and acquaint them with their duties; he makes plans for the location, date, and scope of the orientation and critique. The chief umpire/controller makes sure that his plans conform to the scenario and operation plan.

46. Directive

a. The directive results from staff and command consideration of the unit's state of training, time factors, availability of equipment, and the availability of supporting troops. The directive contains the planning guidance necessary for the director and the preparing staff to initiate their plans. As a minimum, the directive designates the type of exercise, the strategic setting, the director of the exercise, the training objectives, the designation of

an Aggressor force, the units that will participate, the area available, time limitations, funding requirements, and any assumptions.

b. Upon receipt of the directive by the preparing staff, the exercise director discusses the various aspects of it in a planning conference. The directive is then studied by all director staff members so that they can become completely familiar with their responsibilities in the planning and preparation of the exercise.

47. Research

To insure the efficient conduct of the exercise, enhance realism, make use of the latest techniques, and verify the correctness of doctrine set forth during the exercise, each director staff member studies pertinent references within his sphere of activity. He should systematize his research and the collation of his material. In addition to the suggestions in paragraph 31, other helpful material is available through library services, unit histories, service journals, and semiofficial publications, from members of the Air Force, Navy, and Marine Corps who are qualified to offer expert or pertinent advice in their fields, and from foreign army representatives. The training directives of higher headquarters must also be consulted for the inclusion of integrated subjects.

48. Planning Schedule

After a thorough study of the directive by the preparing staff, the G3 prepares a planning schedule calling for the completion of the various supporting plans within the time available for preparation. He accomplishes this by first determining the date on which the training memorandum with all annexes is to be published. By planning backward, he establishes the completion date of all supporting plans based on this date. The planning schedule lists all of the major plans required for the exercise. It designates the staff officer responsible for each and the time it must be submitted for the commander's approval. This provides for coordinated and timely planning. Detailed coordination between responsible staff officers is necessary when overlapping areas are encountered.

49. Reconnaissance and Outline Plan

a. A map, ground, and aerial reconnaissance is necessary to organize the exercise area. This task involves close coordination between the G3 and G2. Once the planning schedule is formulated and disseminated, the G3 and G2 make a map reconnais-

sance of the exercise area. In planning backward for a large unit exercise, the G3 first determines the general area in which the problem will terminate. In conjunction with the G2, he then works back through the exercise area, selecting general locations for friendly and enemy activities and dispositions. Combat situations that will accomplish the training objectives of the exercise are visualized at each of these locations.

b. These activities are controlled by the use of phase lines, boundaries, assembly areas, and barriers to guide the exercise along the lines intended by the directive. This visualization of the manner in which the exercise will be conducted is called the outline plan. It can be portrayed graphically using overlay techniques. The outline plan provides for—

- (1) Moving the participating unit to the exercise area.
- (2) Starting the exercise (initial situation).
- (3) Conducting the exercise (subsequent situations).
- (4) Terminating the exercise.

c. Once the outline plan is completed, a ground and aerial reconnaissance is made to confirm the plan. Any changes dictated by the actual terrain are made and the final outline plan is then presented to the exercise director for his approval.

50. Scenario

a. General.

- (1) The G3 prepares the scenario as an annex to the training memorandum. It is the basis for the preparation of all supporting plans, which must be carefully coordinated with it. The scenario may be prepared in narrative form, in graphic form on a map or an overlay, or in a combination of the two. The scenario is based on the outline plan.
- (2) The scenario may be general or detailed, depending on the desires of the commander and the purpose of the exercise. Scenarios of a general nature are used in exercises designed to develop coordination in the command, or when the exercise is to be the vehicle for a training test. Scenarios of this category outline only the broad aspects of the exercise, such as the mission, phase lines, times to cross phase lines, and the action of the command as a whole during each phase of the exercise. This allows greater freedom of play on the part of the participants. A detailed scenario is used

when the purpose of the exercise is to correct specific deficiencies or to emphasize specific points in training. An exercise based on a detailed scenario requires close control and allows the participants less freedom of play.

b. The General Situation. The general situation includes the strategic setting, a general statement describing the situation of friendly and enemy forces, the location of the participating unit relative to the ground and other units, the recent tactical activities of the unit, and the location of the unit commander if he is not present at the time. It furnishes the tactical background knowledge the participants would normally possess in a tactical situation. For large exercises, the general situation is usually issued administratively to the key personnel and disseminated through regular command channels. Imagination and realism must be incorporated into the general situation. This arouses interest and enthusiasm and logically leads the unit into an assumed combat situation.

c. The Initial Situation and First Requirement.

- (1) The initial situation is any action, order, or activity that will cause the problem to start in a realistic manner. It is developed under tactical conditions and requires specific action on the part of the unit and its leaders. Normally, it is unrealistic to start the exercise with the participating unit in contact with the enemy. The initial situation should be prepared in such a manner that it will phase the unit into a contact situation. This allows time for staff planning and coordination prior to commitment of the unit.
- (2) The initial situation for the field exercise is accompanied by a requirement. This requirement is a general statement of what action is *expected* on the part of the units and the unit commanders as a result of the situation which confronts them. The requirement is furnished for use as a guide by umpire and control personnel. It is the basis for preparing detailed umpire check lists.
- (3) The initial situation and first requirement provide for satisfying one or more of the training objectives stated in the directive.

d. Subsequent Situations and Requirements. Seldom will the initial situation provide all the training required by the directive. For this reason and for the sake of continuity and realism, subsequent

situations and requirements are written into the scenario. For clarity of instruction to control personnel, subsequent situations contain information on *who* is involved in the situation, *what* happens during the situation to bring out the desired training, *when* it happens, *where* the action takes place, and exactly *how* the action is brought about.

e. Time Schedule (par. 33d). To provide for the completion of all the training objectives, it may be necessary to divide the exercise into phases. Normally, an active phase is followed by a short administrative phase to allow the unit time to reorganize, consolidate, or change location in preparation for the next active phase. In this manner the most judicious use is made of training time and the tendency to compound deficiencies is minimized.

f. Schedule of Events. A schedule of events may be prepared as an inclosure to the scenario. This is an abbreviated scenario arranged chronologically in column form to provide a ready index to the time, place, persons or units involved, and activity planned for any given situation.

51. Operation Plan

a. General. The scenario is the operation plan for the tactical exercise. It will, however, require further development by the G3 and other members of the exercise staff to produce the various supporting plans that are required. These include any warning and fragmentary orders to initiate play and the complete operation order and its annexes. The operation plan may contain the following supporting documents—

b. Chemical, Biological, Radiological, and Nuclear Plans. These plans cover the scope and objectives of exercise play in these areas. They prescribe—

- (1) Nuclear burst, toxic chemical attack, biological agent attack, and radiological contamination reporting procedures to be used during the exercise.
- (2) Fallout reporting and warning procedures.
- (3) Wind data to be used, if other than that actually in existence at the time of the exercise.
- (4) Scale of use of nuclear, biological, and chemical weapons during the exercise and the capabilities of the logistical support system.

c. Tactical Air Support Plan. The tactical air support plan establishes the scope and objectives of tactical air support play. It covers—

- (1) Concept for tactical air support.

- (2) Extent and nature of Air Force play.
- (3) Air Force agencies to participate with the different Army headquarters.
- (4) Air/ground communications.
- (5) Marking of Aggressor aircraft.

d. *Army Aviation Plan.* The Army aviation plan establishes the scope and objectives of Army aviation play in the exercise and provides for—

- (1) Applicable rules and procedures.
- (2) Reports and markings.
- (3) Safety.
- (4) Communication.
- (5) Air traffic control.
- (6) Employment of armed Army aircraft.

e. *Additional Plans.* Additional plans, such as artillery, engineer, barrier, denial, signal, military police, psychological operations, guerrilla operations, and air defense may be included. Specialized operations, such as amphibious or airborne, require inclusion of appropriate guidance in the exercise directive. These additional plans include the scope and objectives of play in the exercise and other information as required.

52. Intelligence Plan

a. The G2 prepares the intelligence plan in coordination with the G3 and the chief umpire/controller. It provides for the realistic play of combat intelligence.

b. Before writing the intelligence plan, the G2 studies the directive and the scenario and prepares a series of enemy situations that will guide the exercise along the lines intended. He reconnoiters the terrain to make sure that the enemy situations are workable. The intelligence plan and its supporting documents must be carefully coordinated with the control plan as well as the scenario. Documents which support the intelligence plan are the—

- (1) *Aggressor plan and situation.* This plan shows the various enemy situations which must be portrayed by the Aggressor force. A situation overlay should be prepared for each phase to clarify the plan. With this plan and overlay, the Aggressor commander makes his detailed plan of operation to carry out the required tasks.

- (a) The play of intelligence sources and agencies such as air, surveillance devices, patrols, U.S. Army Security Agency, documents, prisoners of war, and technical intelligence is described.

- (b) Counterintelligence, guerrilla activities, and intelligence activities in rear areas are narrated.
- (c) Distinction is made between exercise and actual security and intelligence measures.
- (2) *Directive to Aggressor commander.* The G2 prepares this directive as a means of outlining the responsibilities of the Aggressor commander. The training objectives are cited, exercise dates announced, and the suspense date for the Aggressor commander's operation plan is specified. The command relationship between the Aggressor commander and the exercise director or chief umpire/controller is stated in this directive.
- (3) *Special instructions to Aggressor forces.* These instructions are prepared as an inclosure to the Aggressor commander's directive. They outline matters of interest to the entire Aggressor command. As a minimum these instructions should cover—
 - (a) The composition and identity of the Aggressor force.
 - (b) The Aggressor uniform and equipment.
 - (c) Provisions for an orientation of Aggressor key personnel.
 - (d) Guidance for conducting Aggressor schools.
 - (e) Pre-exercise training area allocation.
 - (f) A rehearsal schedule for Aggressor forces. Rehearsals may be in the form of a map maneuver, command post exercise, field exercise, or a combination of these.
- (4) *The intelligence information distribution plan.* The continuous play of intelligence before and during the tactical play of the field exercise is provided by the intelligence information distribution plan. This plan shows the intelligence information to be released, the manner of releasing it, and a schedule for distribution. There are two categories of intelligence information released: that which the unit must receive so that the exercise progresses as planned and therefore receives it automatically; and that which the unit receives only when it takes the proper action to obtain it. The most realistic method of starting intelligence play for the large unit field exercise is to provide for the early issue of intelligence to the participating unit from the

next higher tactical headquarters (chief umpire/controller). This is accomplished through the dissemination of area analyses and intelligence summaries and reports. This action provides background for tactical as well as intelligence play at all levels during the exercise. The Aggressor plan and situation and the intelligence information distribution plan are carefully coordinated so they will be in phase.

- (5) *Intelligence annex to the operation order.* The intelligence annex contains the specific orders and requests that are the basis for intelligence activity by the participating unit during the play of the exercise.

c. As the size of the unit increases, the details of preparation of the intelligence plan become more complex. Careful planning is required to achieve the desired degree of intelligence play and to exploit the capabilities of participating intelligence personnel and agencies. Appropriate documents and reports are prepared to supplement the information contained in the intelligence plan. They include analyses of the area of operations, periodic reports, intelligence summaries, and initial allowances and subsequent issues of maps (FM 30-5).

53. Control Plan

a. The control plan provides for the organization of the umpire/control system and for instructions pertinent to the control and evaluation of the exercise. The success of the exercise depends to a large degree on the thoroughness of this plan and how well it is carried out.

b. The director staff G3 or the chief umpire/controller prepares the control plan. He refers to the exercise scenario and appropriate references in order to build an umpire and control system that will provide the proper degree of control and evaluation. All instructions for control personnel (exercise director, control group, chief umpire/controller and staff, and unit umpires) must be prepared in conformity with the scenario and the intelligence plan. The control plan contains the following supporting documents:

- (1) *A plan for umpire/controller distribution and assignment.* Distribution of umpires and controllers is determined by the chief umpire/controller, based on the degree of evaluation and control the exercise director desires. A notation of the lowest level at which umpires are to be used may be included in the directive. The G1, in

conjunction with the G3, makes recommendations to the exercise director regarding the source and selection criteria of umpires and controllers. If the umpires and controllers are taken from the participating units, there will be vacancies which will have to be occupied by junior personnel. This is desirable at times, particularly in the latter phases of training. At other times, however, it is more desirable to have the unit at full strength with all personnel in their assigned positions; for example, when the exercise is for testing a unit or for a training inspection. Assignment is the process of assigning each umpire or controller to a specific headquarters or unit for the period of the exercise, or assigning each within the control organization (pars. 162-168).

- (2) *Safety instructions.* In attaining maximum realism, hazardous conditions and situations may arise which could have an adverse effect on the progress of the problem and the individual participants. To preclude accidents and injuries, specific safety instructions are prepared and disseminated well in advance. The responsibility for implementing these instructions rests with the control personnel in the exercise area. However, this in no way lessens the command responsibility within the participating unit for issuing, clarifying, and enforcing safety rules. Safety instructions include—
 - (a) Objectives and responsibilities.
 - (b) Accident causes and preventive measures.
 - (c) Accident reporting. The use of spot reports as well as formal accident reporting and investigative procedures are prescribed.
- (3) *Umpire/controller communication and transportation plan.* Good communication is an essential element of control and coordination among umpires and controllers. The large unit field exercise which encompasses operations over extended distances creates numerous obstacles to continuous and efficient communication and requires of umpire personnel a high degree of mobility. The G3, assisted by the G4 and the director staff signal officer, prepares a plan for communication and transportation to support the exercise. Since the

participating units require most of their organic communication and vehicular equipment during the exercise, the G3, G4, and signal officer normally provide for this equipment from other sources. An effective plan is one that provides for the displacement of umpires and links all major control headquarters, the artillery umpires, fire marking teams, and friendly and Aggressor forces on a continuing basis. Both wire and radio are used whenever possible.

- (4) *Schedule of umpire/controller training.* This schedule shows the type of training to be given umpire and control personnel to qualify them as umpires, controllers, and evaluators. The degree of training is dependent on the background and experience of these individuals. The schedule provides for—
 - (a) A detailed orientation on the field exercise, to include the training objectives, the methods of attaining the objectives, the scenario, and supporting plans.
 - (b) A detailed reconnaissance of the exercise area.
 - (c) A school which emphasizes functions of the umpire and controller, qualification in the use of umpire and control equipment, map reading, and tactics.
 - (d) Rehearsals in the form of tactical exercises to insure complete understanding of the exercise.
- (5) *Records and reports.* The G3 is responsible for formulating a plan for reporting procedures. As a minimum, these reports should include a periodic report of unit activities, special reports covering specific subjects, and after-action reports at the completion of the exercise. Requirements for after-action reports designate the commanders who are to submit after-action reports, the format, number of copies, and suspense date. All reports are tabulated to show the report title, basic references, submitting unit, time interval covered, time report is due, form to be used, number of copies required, and normal method of transmission.
- (6) *Umpire checklists.* The chief umpire/controller prepares umpire checklists to guide the umpires in their analysis and evaluation of actions taken by the players.

The checklists also provide a coordinated and comprehensive basis for critique discussion and after-action umpire reports. They consist of a series of questions regarding combat, combat support, and combat service support actions pertinent to each type of unit or headquarters. Information contained in the checklists is collected at the end of each active phase or at the end of the exercise and is used in preparing the critique and after-action reports. The checklists reflect in detail the exercise requirements stated in the scenario.

- (7) *Uniform Markings, Color Control, and Exercise Rules.* This plan prescribes—
 - (a) Uniform markings for identification of Aggressor, umpire, controller, and observer personnel.
 - (b) Vehicular, aircraft, and equipment marking.
 - (c) Pyrotechnic and munition signals and instructions for their use.
 - (d) Flag signals and instructions for their use.
 - (e) Funding, authorization, and source of supply for uniform markings, pyrotechnic and munition signals, and flags.
 - (f) Umpire rules.

c. For more detailed information on umpire and control organization, functions, and communication, see Part II of this manual.

54. Administrative Plan

a. The purpose of the administrative plan is to provide for *actual* combat service support and combat service support *play* in the exercise.

b. The G4 prepares the administrative plan in close coordination with the G1 and G5. This plan covers all administrative details concerning the preparation, conduct, and after-action phases of the exercise and contains instructions for the realistic play of combat service support for both Aggressor and friendly troops. It also provides for the concurrent training of the combat service support elements involved.

c. The G4 coordinates with the G1, G5, and appropriate special staff officers regarding the play of combat service support, including the establishment of complete or skeleton combat service support installations and resupply. He determines the availability of essential supplies, and plans for medical evacuation and traffic circulation. The administrative plan must be in consonance with the

scenario and the operation plan. It consists of the following supporting documents:

- (1) *The umpire/controller assignment plan.* This plan lists all personnel to be assigned as umpires and controllers and places them under the control of the chief umpire.
- (2) *Movement plan.* The number of participating troops, Aggressor troops, and control personnel involved in the large unit field exercise requires that the director staff G4 prepare a detailed movement plan to coordinate the use of transportation and use of all routes into and out of the exercise area. Failure to do so may result in many difficulties that could have a direct effect on the entire time schedule of the exercise.
- (3) *Maneuver damage control plan.* Closely related to the claims plan is the maneuver damage control plan. It prescribes—
 - (a) General Policies.
 - (b) Responsibilities of commanders and units and the areas for which they are responsible.
 - (c) Training and orientation of troops, claims personnel, and repair teams.
 - (d) Restrictions, limitations, and precautions to be observed, to include rules governing vehicular travel, use of airstrips, communication, command post sites, and wire and cable laying.
 - (e) The organization for maneuver damage control and the organization of maneuver damage control teams and their duties.
 - (f) Participation of umpire and control personnel.
 - (g) The following reports—
 1. Pre-exercise.
 2. Spot reports of damages.
 3. Exercise locations of all player and support units.
 4. Post-exercise repair reports.
- (4) *Civil Affairs Plan.* The civil affairs plan establishes the scope and objectives of civil affairs play in the exercise. It includes—
 - (a) Procedures for treatment and identification of civilians residing in or near the exercise area.
 - (b) Concept for employment of civil affairs units and personnel.
 - (c) Information concerning use of civilians or military dressed in civilian clothing

for the purpose of gathering intelligence or participating in unconventional warfare, and their detection and treatment in relation to actual civilians residing in the maneuver area.

- (5) *Administrative instructions.* These are the instructions which the participating unit, Aggressor forces, controllers, and supporting agencies must receive in order to be guided in their preparation for the field exercise and their conduct during the field exercise. They include—
 - (a) The extent of play of the various classes of supply.
 - (b) The extent of casualty play.
 - (c) Evacuation and hospitalization.
 - (d) Play of unit replacement and individual replacement.
 - (e) The types of reports to be played.
 - (f) Play of simulated losses in equipment.
 - (g) Traffic control and circulation in the exercise area.
 - (h) Arrangements for observers.
 - (i) Uniform and equipment markings, and pyrotechnics and their use.
- (6) *The administrative order or paragraph 4 of the operation order.* This order provides for realistic play of all combat service support elements in the performance of their normal combat service support functions.

d. Once the G4, G1, G5, and special staff officers prepare their respective portions of the administrative plan, they make a detailed ground reconnaissance to verify the feasibility of their plans.

55. Alert, Emergency, or Readiness Measures

a. Since forces in an exercise may be required, on call, to execute actual operation or alert plans, a transition plan is prepared to terminate the training exercise with little or no warning. Multiple and secure notification means are provided for this purpose.

- (1) If a situation arises that requires implementation of operation or alert plans and which warrants the immediate termination of the exercise, the exercise director may terminate it by transmitting in the clear, duly authenticating certain preselected code words.
- (2) The code words are transmitted by each player and control echelon taking part in the exercise.

- (3) In such event, the exercise will cease. All communication circuits are cleared for emergency traffic. Those circuits out of action for exercise traffic are restored immediately.

b. If a situation develops which warrants temporary suspension of the exercise in a specific area, the exercise director, senior control officer, or a tactical commander may suspend the exercise by transmitting in the clear, on appropriate communication channels, the preselected code word signifying emergency suspension of the exercise.

c. Careful distinction is made between exercise instructions and actual instructions pertaining to an operation or alert plan.

56. Orientation and Critique Plan

The director staff G3, or the chief umpire/controller in conjunction with the G3, prepares this plan. It contains detailed instructions for orienting the players before the exercise and for the critique after the exercise.

a. The pre-exercise orientation is essential if all personnel are to start on the same basis and carry out their duties with interest and enthusiasm. Sufficient key personnel of the participating unit are designated to attend the orientation to insure dissemination of pertinent information to all participants. The plan and orientation must lead to an understanding of the training objectives and the general manner of attaining these objectives. A classroom arrangement with appropriate briefing aids will assist materially. A schedule of speakers is published and a rehearsal conducted to prevent duplication, overlap, or conflict in instruction.

b. The critique is held as soon as practicable after the exercise. Consideration is given to the physical condition of the troops, location of units, and the time needed to collect, collate, and evaluate the umpire reports. The most effective critique is one that is brief and to the point. A review of the training objectives, by phases, and discussion of major achievements and errors will satisfy this requirement. Like the orientation procedure, the critique is rehearsed and then presented to the key personnel. Unit commanders are allowed sufficient time to continue the critique process down to individuals in the smallest participating units.

c. Although the orientation and critique plan is considered a major plan, it may be published as an appendix to the control plan.

57. Information Plans

a. The director staff information officer, through coordination with all staff sections, prepares a public information plan to take advantage of the opportunity for developing an awareness of the Army's mission in the minds of the public. The extent of this plan is determined by the scope and objectives of the exercise and the command emphasis attached to it. In the interest of sound public relations, it is incumbent upon the exercise director to prepare the local populace for any unusual or inconveniencing situations that may arise.

b. All exercises have certain security, political, and public relations implications. These implications should be carefully weighed and a basic concept for publicity formulated for each exercise. When publicity is *not* desired, policies are established for the handling of press inquiries. In formulating public relations and information policies for a particular exercise, the following actions are taken—

- (1) A suitable press release date is determined in advance, taking into consideration the requirements for security, public relations, and any international political interest.
- (2) Release of detailed information concerning the nature and location of exercises and participating forces is weighed in relation to the security and political implications.
- (3) Invitations to the press are prepared by information officers and cleared by security staff officers. The invitations may include a request that no publicity be given the exercise prior to the predetermined date.

c. The public information plan provides for—

- (1) Initial releases announcing the exercise.
- (2) The extent of hometown press releases and radio, television, and other media coverage.
- (3) The extent of press coverage and invitations to be issued.
- (4) Support of media representatives.
- (5) Briefings and courtesies to be extended.

d. The troop information plan provides for—

- (1) Troop orientation.
- (2) Exercise news publications or other news dissemination media.

58. Claims Plan

When a large unit field exercise involves the use of privately-owned land, buildings, or equipment, the director staff G4 must prepare a claims plan. He coordinates with the G1, staff judge advocate, engineer officer, and G3. The plan designates—

a. A claims officer. He must be appointed early enough to execute the leases for the property required. The same officer should be responsible for settling any claims arising from the exercise.

b. The amount of land, equipment, or building space required.

c. A rental procedure which includes the length of time that these facilities will be required.

d. The limitations that are imposed on the use of all leased property.

e. The means for issuing these instructions to all units affected.

f. A means of processing claims.

g. The procedure for obtaining claim releases.

h. The off-limit areas.

59. Publication of the Training Memorandum

The director staff G3 draws up a training memorandum as the final step in preparing a field exercise. This memorandum is used for issuing the necessary orders, instructions, or directives to all personnel and units participating in or contributing to the exercise. It is prepared as a basic memorandum with annexes.

a. The basic memorandum answers the *who*, *what*, *when*, *where*, and *why* of the exercise. It is paragraphed to show the purpose of the exercise, references pertaining to the tactical doctrine involved, and a schedule of participation.

b. The annexes to the basic memorandum contain information requiring special distribution or instructions on particular subjects that are detailed or lengthy. They consist of the scenario with the operation order and administrative order, the orientation and critique plan, the administrative instructions, the control plan, and the special instructions to the Aggressor forces. Only "need to know" annexes are attached to the training memorandum which is issued to participating units.

60. Comptroller Matters

The large field exercise of division or higher level normally requires, for funding purposes, the assignment of a comptroller as a permanent member of the director staff. Since the cost of most activities connected with the exercise must be met by special field exercise funds, a policy of rigid economy must be pursued at all levels.

61. Conduct

a. A field exercise is conducted with the same care and attention to detail that go into its preparation. A properly prepared exercise can be ineffective if its conduct is not thoroughly planned and coordinated.

b. Although the staffs of all headquarters and the communication system may function continuously during a field exercise, the combat features of the exercise are ordinarily played in phases. Each phase consists of an action that can be presented with realism and effectively controlled by umpires. For example, an approach march to contact, followed by an advance guard meeting engagement and subsequent deployment of the entire force, is very difficult to present realistically in terms of enemy fire and movement if the action flows continuously. It is better to divide a field exercise of this scope into phases; for example, approach march and meeting engagement involving lead elements only; issuance of unit operation orders; movement to attack position or assembly area; and execution of unit attacks. The chief umpire/controller announces the end of each phase. During the intervals between phases, umpires and commanders explain the progress of the exercise to the troops. In exercises involving a battalion or larger unit, the series of phases should take up to two or more days. This enables the units and the command and staff echelons to receive training in continuous operation. The exercise will have more training value if it is carried through to a logical conclusion.

c. The play of the exercise normally begins with the commander's orders for starting action on the first requirement. The commander's first need is information of the enemy. He is allowed to obtain this information only if he seeks it through the regular higher headquarters or subordinate units, through the various reconnaissance agencies, or by personal reconnaissance. If he follows this procedure, the umpires furnish the information that he would normally obtain this way.

d. While umpires are not charged with the actual control of troops, they influence their movement and conduct by assessing casualties and restricting forward movement against superior firepower. It is important for umpires to prevent a situation from developing more rapidly than it would in combat and to keep the exercise from proceeding at an illogical rate. They penalize improper formations and exposed elements by subjecting them to air attack, artillery fire, or small arms fire.

e. Commanders are responsible for tactical decisions and the appropriate orders to carry out the decisions. Umpires must avoid curbing the commander's initiative. For example, if a commander orders his unit over an exposed area swept by hostile fire, the umpires should not countermand the order. Instead, if the situation warrants, the

Aggressor is instructed to indicate such heavy fire that the umpire can inform the commander that he is unable to advance because of the enemy's fire superiority. Then the commander must either establish local fire superiority or change his scheme of maneuver before he is allowed to advance.

f. The scenario is the basis for umpire control. It is impossible to foresee all of the situations that may arise during the exercise, or to include in the scenario all of the instructions that may be necessary. Therefore, based on their knowledge of the situation, the umpires must supply the action needed to keep

the exercise within the preconceived plan.

g. The chief umpire, his assistants, and the Aggressor force act continuously to give the exercise mobility and continuity. Assistant umpires keep their senior umpires informed of the situation, particularly troop movements, and the chief umpire/controller maintains contact with the exercise director. In this way the field exercise progresses in a manner aimed at accomplishing all of the training objectives. This forceful supervision during the conduct phases results in superior training for the units concerned.

Section III. OTHER TACTICAL EXERCISES USED TO TRAIN BATTALION AND LARGER UNITS

62. Command Post Exercise

The command post exercise is developed in the same manner as a field exercise for battalion and larger units, except for the following variations:

a. The primary purpose of the command post exercise is to train commanders, staffs, communication personnel, and certain headquarters personnel. However, it is invaluable as a means of rehearsing a field exercise or preparing for a field maneuver prior to its actual conduct.

b. Subordinate units do not participate in the exercise except for headquarters and communication personnel. Umpires represent each unit—higher, lower, or adjacent—that is not represented by its own personnel.

c. Since subordinate units are not present, changes in the tactical situation do not require time to physically relocate the units. This permits using a time ratio in the exercise to save training time. When a participating headquarters is planning an operation, the ratio is 1 to 1 (1 hour of problem time equals 1 hour of clock time). After the planning phase is completed and orders issued, a ratio of 3 to 1, for example, may be employed during the execution phase. Thus, 3 hours of problem time equal 1 hour of clock time, and a time saving is realized.

d. If the exercise is of reduced distance, a reduction in the use of communication equipment and transportation is possible. Support requirements are also reduced in this case.

e. The directive specifies the headquarters and categories of personnel to participate and the time ratio to be used.

f. The reconnaissance made by the G2 and G3 can be reduced to a map reconnaissance in most cases.

g. Since entire units do not participate, the scenario must be written in greater detail to guide the umpires representing these units. For the same reason the information distribution plan is prepared in much greater detail.

h. When the Aggressor force is not represented by players, the directive to the Aggressor commander is not necessary. However, it must be remembered that controllers will then represent the Aggressor and they must be provided with a situation map containing the planned employment of the Aggressor force. In the one-sided command post exercise, the Aggressor plan of employment is prepared by the director staff G2.

i. The plan for actual administrative and logistical support is reduced in accordance with the reduction in personnel, units, and equipment.

j. While control is one of the most important factors in this type of exercise, the total requirements for personnel and equipment are reduced.

k. In conducting the exercise, umpires and controllers follow the exercise scenario and the Aggressor plan and overlay to represent the Aggressor force in the exercise area. The Aggressor situation map must be maintained in accurate and timely detail. Umpires and controllers portray the result of actions by subordinate units by sending messages to the participating headquarters.

63. Map Exercise

a. *Advantages.* A map exercise is the most commonly used and probably the most effective type of tactical exercise for classroom presentation of command and staff principles, doctrine, and procedures. It overcomes many of the inconveniences of field exercises and field maneuvers. In addition to being economical and suitable for training large numbers of

officers for key positions, the map exercise has no artificial limitations of safety zones, private property, or understrength units, which sometimes detract from field training. It offers a broad field for selecting terrain to fit any type of problem, since any terrain can be used if suitable maps are available. Map exercises permit realistic training in the preparation of plans and orders from a map.

b. Disadvantages. A map exercise is not realistic as to time, space, weather, and terrain. It provides only a limited opportunity for introducing problems that arise from human imperfections and mechanical failures. It is difficult to demonstrate in a map exercise that sound, workable plans and clear orders will not, by themselves, insure success in battle, but that constant supervision and determined execution by capable and aggressive leadership is equally important and necessary. Realism must often be sacrificed to provide certain facts and assumptions as a basis for solution that the commander or staff would have to deduce in a real situation. In the map exercise it is difficult to portray conditions that show how surprise influences a given situation. Map exercises should be planned and developed to minimize these disadvantages as much as possible.

64. Directive

The directive requiring the preparation of a map exercise contains information similar to that for a field exercise except as prescribed below.

a. Purpose. Examples of training objectives stressed in a map exercise are making staff estimates, preparing operation and administrative plans and their annexes, planning special operations, and making oral estimates and decisions and preparing fragmentary orders in successive situations.

b. Type of Training. The type of training in a map exercise influences the conditions which are assumed during the conduct of the problem. These include the weather, the time of year, and time of day, as well as operational variables such as offensive or defensive operations.

c. Time and Place. The place, date, and time of the exercise are stated in the directive. (A map exercise is normally conducted in an indoor classroom.)

d. Units to Be Played. The size and type of units involved depend on the level of the training. If the objective of the exercise is to prepare command and staff officers at division level, then divisions should normally be the largest units played.

e. Maps. If the maps to be used for the exercise are not specified in the directive, the officer preparing the exercise may choose appropriate ones that are in adequate supply. The maps must show terrain features suited to the exercise; for example, the most obvious features such as a river for river-crossing instruction, as well as less apparent ones such as soil trafficability for armored operations. The map scale must be large enough to portray the complete operation and all the details a student needs to make an adequate analysis of the area of operations. It may be necessary to use two maps of different scales to fill both these requirements and to show both general and subsequent situations; but it is desirable to use only one map for the tactical play when possible.

f. Status of Training. The officer preparing the exercise should know what training his students have completed and what future training has been planned for them. This information enables him to develop his map exercise at a level that is both instructional and interesting.

65. Research

To insure authenticity and realism, it is necessary to study tactical and historical references that will provide a background of information in preparing the exercise. The same research procedure is followed as for the field exercise.

66. Developing the Plan

a. The first step in developing a plan for a map exercise is to write an outline of presentation. This outline is a list of the training objectives in a logical sequence of instructional blocks with classroom time allocated to each of the blocks. The training objectives are those stated or implied in the directive and expanded or modified by the author after he has studied his reference material. The outline of presentation is perhaps the most important step in developing a map exercise because it is the basis for most of the other preparatory work.

b. If the directive does not specify the map to be used for the exercise, the preparing officer's next step is to choose a map that is appropriate.

c. The officer then makes a tentative plan on the map for the play of the exercise, basing it on his outline of presentation. The plan must insure that the students arrive at the goal indicated in the outline of presentation. The best approach is to decide first how the students are to participate. The author asks himself, "What can I require of the student in this exercise that will cause him to learn?" This is

a general question and it should be answered generally, without a specific situation in mind. For example, the author may decide that the student should demonstrate and apply his knowledge by participating as the G3 of a division and that he will require the student to submit on an overlay his recommendations for the zones of action and line of departure to implement an attack. He leaves until later the exact wording of the requirement which will produce this effort on the part of the student and the writing of the situation that will provide the basis for the solution. In the outline of presentation he determines the general pattern for student participation in each of the training objectives.

d. After the author establishes a general pattern for the requirements, he determines the specific situations that he will place in the exercise. Completeness and continuity of the situations are important. When he has decided on the specific situations, he organizes the exercise area. This consists of outlining on the map the situations in the exercise. To do this, he visualizes the disposition of troops and installations, both friendly and enemy, on the ground represented by the map. He decides, for the entire exercise, what the activities and movement of the opposing forces must be to tie in with the situations he wants to present. By outlining on the map the various forces and activities, he obtains a graphic picture of the plan and play of the problem.

67. Study Assignments

a. Students must have sufficient background knowledge, acquired through experience or study, to allow them to participate intelligently in the map exercise. Since experience is a variable factor within any group, the preparing officer must select study assignments for the members that will give them a common level of background knowledge. He can choose a minimum study assignment of new and review material by analyzing the answers to the following questions:

- (1) In view of the purpose of the map exercise and its requirements, what does the student need to know?
- (2) How much does the participant already know, based on previous instruction?
- (3) For this particular map exercise, what learning is to take place solely in the classroom?
- (4) What remains for the participant to learn before he begins the map exercise?

b. The officer also assigns any practical work that the students need to complete before they start the map exercise.

68. Checking the Initial Plan

The author has now decided on the requirements necessary to emphasize the training objectives and has devised situations that will lead to their logical presentation. He has made a graphic portrayal of the exercise on the map and chosen study assignments for the participants. This completes his initial planning, which he should check with the directing authority, if appropriate, before proceeding with the final plan. The author and the directing authority check the following:

a. Outline of presentation to see that the allocation of training time and the method of presentation are practical.

b. The preparing officer's notes on the requirements and situations to see that they are complete, clearly stated, and plausible.

c. Organization of the exercise area to see that the story of the exercise is clearly revealed and that the terrain has been used adequately and correctly.

d. The study assignment to see that it is pertinent and maintains continuity with other instruction.

69. Writing the Exercise

The author is now ready to write the exercise in its final form. He prepares the situations and requirements that he will present to the students, and the administrative requirements. The requirements are as follows:

a. *Student Requirements.* Realism is of paramount importance in a good requirement, whether it is one of tactical decision, strategic planning, or staff work at any level. The correct wording of a requirement is also important and requires considerable thought, skill, and practice. The officer must specifically state, without excess wordage, what is wanted from the students. Appropriate subjects for requirements in a realistic sequence of events are—

- (1) An estimate of the situation for use in arriving at a recommendation or a decision.
- (2) The development of long-range and contingency plans or portions of them.
- (3) The preparation of instructions and orders or portions of them.
- (4) The actions taken when subordinate units request modifications in plans, orders, and instructions. Such requests are common and require the use of judgment and knowl-

edge on the part of commanders and staff officers.

- (5) The actions and orders of commanders and staff officers during the execution of plans and orders.
- (6) Coordination within a staff and between commanders.

b. General Situation. The instructor gives the students the general situation immediately before they start the exercise. It consists of a brief picture of the events that take place immediately before the exercise begins, including a short summary of what the participating unit has been doing, its location at the start of the exercise, and friendly and enemy situations. The friendly situation starts with a unit two echelons higher than the participating unit. For example, for a battalion exercise, the statement of the friendly situation starts with the division. The maps that will be used are specified.

c. Subsequent Situations. The officer preparing the exercise now puts his tentatively planned subsequent situations in final form, writing them in such a way that they tell a realistic story. The situations can be described realistically by using complete orders or extracts, estimates, and reports that would be normal in combat. The situations in a map exercise must do more than present a complete set of facts from which a solution may be deduced; they must indicate the status of variable influencing factors in the light of which military principles are applied to arrive at a sound solution. The following are the most commonly used variables:

- (1) *Mission.* This is the most important variable. The use of a specific mission in connection with other variables allows the officer to create almost any situation desired. Students must have as much practice as possible in meeting and overcoming the many variables that affect the accomplishment of the mission.
- (2) *Relative strength.* Portraying the enemy as being weaker or stronger in manpower, firepower, or materiel ordinarily causes aggressive or passive action on the part of the friendly force being played in the exercise. To create maximum realism, relative strengths should seldom be presented as the single decisive variable.
- (3) *Morale.* It is difficult to portray realistically a state of morale and the effect of morale on the combat efficiency of a force. When a situation is based on a force's state of morale, the instructor can only give

facts that have a bearing on morale and then require the student to deduce their effect.

- (4) *The composition and disposition of forces.* Either one or both of these factors may be made a critical influence. A superiority in friendly artillery, for example, may justify attacking an enemy that is equally strong in other respects. Similarly, a weaker force, mobile and prepared for combat, may make a successful attack against a larger force that is in an unfavorable formation or position. Other variables such as weather and terrain are closely related to these factors.
- (5) *Reinforcements.* The location of an available reinforcement, along with information that can be used to estimate the time when it can enter the battle, has considerable influence on a decision.
- (6) *Terrain.* Observation, cover, troop movements, location of installations, and transportation are all affected by terrain. Unnatural assumptions regarding terrain should be avoided in a map exercise; terrain best suited to the operation should be selected. The student should be required to use it as represented on the map.
- (7) *Time and space.* Distance, as an element of time and space, enters into most of the variables mentioned. Distance must always be considered in connection with rates of movement and time. Varying amounts of daylight and darkness can be used in connection with distances to create a desired situation.
- (8) *Combat service support.* The status and continuity of combat service support (labor, manpower, civil affairs, supply, evacuation and hospitalization, transportation, and service) can determine the effectiveness of any military force.
- (9) *Weather.* This factor should always be introduced into map exercises, particularly its effects on observation, fire, and ground mobility.

d. Time Schedule. The officer preparing the exercise makes a time schedule showing the amount of time to be devoted to the orientation, the situations and requirements, and the critique. A rehearsal assists in confirming the time schedule.

e. Assignments. The instructor prescribes the student study assignment in the form of references

to standard available texts. He may prescribe supplementary study material in advance sheets when necessary.

f. Advice to Officers Preparing a Map Exercise. Write briefly and clearly. Use simple words and sentences that convey a precise meaning. Keep instructional material to a minimum. In addition—

- (1) Do not issue a separate general situation unless it is essential to understanding.
- (2) Overprint situations on the map rather than issue separate special situation overlays.
- (3) Consolidate material on overlays as much as possible. Do not use overlays to illustrate unimportant changes.

g. Training Aids. The preparing officer is responsible for providing training aids. All training aids that are used should be appropriate to the subject, guarantee an economy of time and effort, and simplify instruction. Small groups do not usually need elaborate aids. For information concerning their use and characteristics, see FM 21-6. Complete instructions for the use of training aids should be included in the lesson plan.

h. Lesson Plan. The author's final major task is to write a lesson plan. This is a plan of the exercise written in such detail that an instructor who is not familiar with the original study and research involved can use it to conduct the exercise. The lesson plan insures a uniform presentation of the exercise to various groups. A more detailed discussion of lesson plans is contained in FM 21-6.

70. Conduct

a. Study assignments are issued to the student before the time scheduled for the exercise. The general situation and the opening subsequent situ-

ation and requirement may also be issued and the students required to solve the requirement before the scheduled presentation.

b. The instructor precedes each situation with a short summary of the principles and techniques that are to be applied to it. He gives the students enough time to complete the requirements as they are presented. He requires one or more students to present and discuss their solutions to each requirement. He then tells them the approved solution, summarizes the principles involved, and points out their application to the situation. In addition to this, he gives the students written copies of more detailed solutions, especially those involving a large amount of actual or computational information. He also distributes written solutions that he does not plan to discuss in class.

c. The preparing officer may have the students solve the requirements individually, by committee (5 or 6 students), or by small staff groups. Individual solutions are appropriate for short requirements that relate primarily to one subject and for which the pertinent factors are already established. Group solutions are appropriate when basic factors must first be considered and when the task can be further divided into subtasks that can be undertaken simultaneously. In deciding whether to use individual or group solutions, the preparing officer considers the time that can be devoted to each requirement. As a general rule, it is seldom profitable to devote less than 1 hour to group work.

d. It is very important to critique a map exercise. The instructor restates all the principles illustrated, discusses the way they were applied to the requirements, and analyzes the lessons learned.

Section IV. CONCURRENT PLANNING AND PREPARATION OF TACTICAL EXERCISES WITHIN LARGE ORGANIZATIONS

71. General

Major headquarters normally program essential training activities one or more years in advance. The funds for the exercise, the participants, the maneuver area or facilities, and the general scope of the exercise are basic factors considered in advance of exercise planning. Early dissemination of this information aids in the planning of training, whether conducted under an Army Training Program (ATP) or as a part of operational readiness training.

72. Exercise Planning Program

a. An exercise planning program for the major

headquarters charged with the planning, preparation, and conduct of a large tactical exercise is initiated with the appointment of an exercise director. The program outlined in example 6, appendix III, is a typical program and follows a normal planning sequence in the determination of what is to be done, when it is to be done, and who is to accomplish it. This program is based on the assumption that a field army headquarters is charged with the responsibility for the development and conduct of a tactical exercise, with corps and divisions participating concurrently during preparation and execution. Although the program assumes

that 120 days are available for detailed planning, this period of time may be increased or reduced as appropriate.

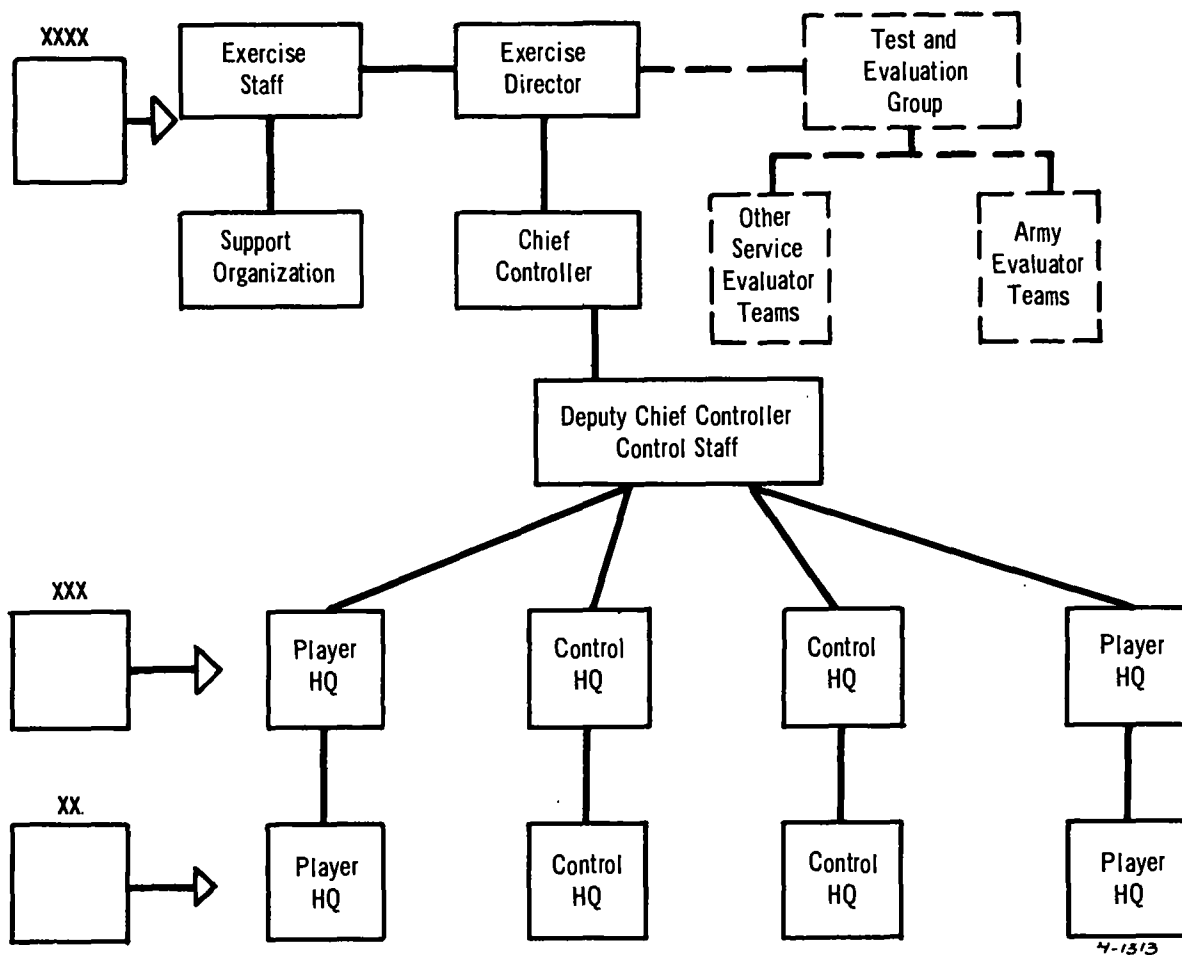
b. The basic planning sequence follows that prescribed in Section II and includes the preparation of the exercise directive, outline plan, planning schedule, scenario, and supporting plans. Provision is made during planning for war gaming both player and control plans. The war gaming and feasibility testing of plans verifies the adequacy and compatibility of player and control plans.

73. Organization for Planning, Preparation, and Conduct

a. An organization that can be used for concurrent planning, preparation, and control of a major tactical exercise is shown in figure 2.

b. The field army commander provides the exercise director, exercise staff, chief controller, control staff, and the support organization.

c. The corps commander provides a player staff and appoints a corps controller and staff. A corps exercise directive is published and plans are made



- NOTES:
1. In joint exercises the exercise staff includes joint representation as appropriate.
 2. In joint exercises the control staff includes joint representation as appropriate.
 3. Additional control echelons are prescribed for other Service elements participating such as Air Force, Navy, or Marines. Certain joint control echelons or systems are integrated into the overall control system but these generally parallel the joint player agencies involved.
 4. The test and evaluation group is added when required. Umpires and controllers may perform as evaluators.

Figure 2. A typical exercise organization for control.

for corps participation in the exercise. The corps controller prepares the corps control plan concurrently with the development of the field army control plan.

d. The division commander provides a player staff and appoints a chief controller and staff. The division exercise directive is published and plans are made for division participation in the exercise. The division controller prepares the division control plan concurrently with the development of the corps and field army control plans.

74. Exercise Objectives

a. Objectives are developed by each headquarters participating in the tactical exercise in consonance with the tactical setting, concept, and objectives announced by the exercise director. Some objectives established for higher headquarters may not be appropriate for lower headquarters; however, all objectives are accomplished within the capability of each headquarters taking part in the exercise. Subordinate commands may add objectives if they do not detract from the accomplishment of those established by higher headquarters.

b. The scope of objectives should be—

- (1) Consistent with the capabilities of the forces involved.
- (2) Consistent with resources made available for the exercise.
- (3) Limited sufficiently to provide subordinate commanders latitude to include objectives of their own.

75. Planning Considerations

a. It is difficult to portray completely all damage inflicted by large forces in combat. If all possible damage is assessed, as in the case of a nuclear strike, many of the participating troops are out of action soon after the exercise begins. Within the guidelines imposed by the requirement to achieve the maximum degree of tactical realism, rules for damage assessment are formulated which are economical of training time and control personnel, portray a sufficient amount of damage, and allow forces to participate in a meaningful manner. Early resolution of these conflicting factors is necessary in the planning of the major tactical exercise. Possible solutions in resolving these conflicts include maintaining a portion of the damage on a bookkeeping basis within the control organization rather than assessing the damage directly against the player forces; phasing the exercise in logical time increments to allow units, personnel,

and equipment to reenter the exercise during subsequent phases; and holding back certain weapons or weapon systems from commanders when maneuver conditions are not favorable or realistic. Typical areas in which determinations are made on damage assessment are—

- (1) Special weapons, including nuclear, chemical, and biological.
- (2) Conventional artillery.
- (3) Air attack on ground targets.
- (4) Damage resulting from guerrilla operations.
- (5) Air defense fire against all types of aircraft and air vehicles.
- (6) Tank and anti-tank weapons.

b. Rules governing tactical and logistical play are established for safety, maneuver damage prevention, the amount of a particular type of play, casualty and damage assessment, the amount and type of simulation, prisoner of war and replacement play, return of casualties and damaged equipment to exercise play, play of obstacles, and time and space factors to be used. Early establishment of these rules assists in the determination of the control and umpire system to be used, the resources in personnel and equipment to be provided to operate the control and umpire system, and the preparations to be made by the participating units prior to the start of the exercise.

c. If part or all of the personnel and equipment required to support the exercise are provided from participating units, a compromise can be made between the complexity and sophistication of the control and umpire system and the loss of effectiveness in command and control which the losing units suffer. All units concerned are informed early in the planning of the support they will provide in order to permit appropriate adjustments in their training or operating programs.

76. Exercise Directive

a. The exercise directive contains the commander's planning guidance necessary for the development of the large tactical exercise. As a minimum, the directive designates the type of exercise, the strategic setting, the director of the exercise, the headquarters responsible for the preparation of the exercise, command structure, exercise objectives, participating units, the Aggressor force if required, areas available, time limitations, assumptions, and funding instructions.

b. On receipt of the training memorandum, participating and supporting units—

- (1) Formulate exercise objectives applicable to their respective units.
- (2) Allocate personnel and equipment requirements between player and control elements and reorganize as required.
- (3) Prepare and publish exercise directives.
- (4) Prepare scenarios for the exercise. Outline plans are distributed to facilitate concurrent planning by exercise director staffs.
- (5) Develop training programs and implementing memorandum to ready their respective units to participate in the exercise.

77. War Gaming of Plans

All plans connected with the exercise, those involving control and umpiring as well as player plans, are tested for feasibility early in the planning stages. These tests are completed prior to the umpire training. So far as possible, plans of player units are examined and tested against the umpire/control system to verify that the latter is adequate to support the objectives of the exercise.

78. Assembling and Training Personnel

a. Control and umpire personnel are assembled, organized, equipped, and trained prior to the exercise. In addition, player personnel are given an extensive orientation on the objectives and rules of the exercise. Orientation may be necessary for local civilians in the exercise area for a large-scale field exercise or maneuver.

b. The control headquarters moves to its exercise location sufficiently in advance of the conduct of the exercise to insure readiness when the exercise starts. This movement precedes player movement to avoid confusion and congestion and permits control headquarters at all echelons to become operational in field locations, to post maps, to test the communication system, and to conduct necessary umpire/controller training before exercise play begins.

c. Ideally, each control headquarters locates and displaces with its counterpart player headquarters. At division and higher levels, space limitations, transportation, communication, and logistical support may preclude simultaneous displacement. These limitations may be overcome by selection of a control site from which control can be exercised as the player headquarters displaces. The controller selects the location of his headquarters after the player headquarters locations have been disclosed during the war gaming phase.

79. Installation of Communication Facilities

Because of the frequent shortage of communication facilities and the extensive added requirements for control and umpiring, much signal construction is accomplished in advance. This is especially true for cable construction in rear areas and to major headquarters, both for initial and subsequent locations during the exercise.

80. Rehearsals

Time and resources must be provided for rehearsals of all control and umpire elements involved in the exercise. Plans for communication, umpire and control organization, and the Aggressor force (if used) can be profitably rehearsed prior to the beginning of play. In large command post exercises, control communication can be tested as part of a control warmup command post exercise. In large map maneuvers, rehearsals are an important part of training the control organization, particularly those elements which must make rapid computations of relative firepower, combat power, losses, and rates of advance.

81. Intelligence Preplay

a. The strategic setting and general situation are issued to players during preparations preceding the exercise. The general situation describes how the conflict arose and sets the stage for the combat phase. The analysis of the area of operations is provided for the players unless some special exercise objective precludes it. This permits requisitioning of maps and the preparation of map boards and other special display devices required by players. Players are notified that intelligence summaries will be issued beginning on a specified date (prior to the exercise) and will continue to be issued at specified time intervals. Preparation of intelligence bulletins, reports, periodic intelligence reports, and intelligence summaries by the control staff furnishes the intelligence buildup for the players prior to the exercise. Players can thus become familiar with the enemy order of battle and enemy operations. Dissemination of intelligence through player channels gives additional training to player intelligence personnel.

b. Timely planning is necessary to insure that sufficient quantities of suitable maps are available and provided to units at the time and places needed. The basic factors which govern this planning are the area of map coverage, the map scales required, initial allowances, and subsequent issues. Procedures for replenishment, replacement, and emergency issues are prescribed.

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PART TWO

MANEUVER CONTROL

CHAPTER 5

CONTROL OF TACTICAL EXERCISES

Section I. GENERAL

82. Definition of Terms

a. Player. "Player" refers to the individuals, elements, and units participating in the tactical exercise as distinguished from control, umpire, and evaluation elements.

b. Control. Control of a tactical exercise is the process of regulating, directing, and guiding the exercise so that its conduct is kept within prescribed limits and the exercise objectives are accomplished.

c. Umpiring. Umpiring is the function of arbitrating and judging under the system of rules prescribed for the exercise. It includes the application of tactical and administrative judgment to a situation to decide what has happened, to portray the situation for the players, and to cause the exercise to develop in consonance with exercise objectives.

d. Evaluation. Evaluation is the function of determining the quality of performance of individuals, units, staffs, equipment and weapon systems and the adequacy of concepts, procedures, and techniques applied in the exercise.

83. Realism in Tactical Exercises

a. Tactical exercises are carried out under conditions resembling battle as nearly as possible. Realistic training in tactical exercises contributes to success in battle with minimal losses.

b. Umpires contribute to tactical realism by presenting to the participating forces combat situations which are as realistic and challenging as possible, by assessing casualties, equipment damage, and PW's, and by announcing rulings in a realistic manner.

c. Controllers contribute to tactical realism by—

- (1) Simulating agencies, headquarters, and other elements not actually playing in the exercise.
- (2) Providing information which cannot otherwise be developed by player elements through player action.
- (3) Causing player elements to react to conditions portrayed by the information flow.

Section II. FUNCTIONS

84. Control Function

The control function involves keeping abreast of the situation and guiding the exercise so that exercise objectives are achieved and the play is conducted within the parameters established by the scenario and control plan. The control function is accomplished by designing built-in features of control such as the general and special situations and controller response to player actions. Controllers secure information by visits to player headquarters, periodic reports from players, player briefings and con-

ferences, and obtaining copies of player orders and messages as shown in figure 3. Controllers disseminate information they obtain through control channels as required to keep lower, higher, and adjacent control headquarters informed. Controllers also furnish information which players could not otherwise obtain because of the simulation in the exercise. They represent nonparticipating agencies, headquarters, and personnel, and furnish players with information they would get from these sources. Some information is provided automatically, that

¹ Provides control copies of orders issued and reports made to higher, lower, and adjacent HQ.

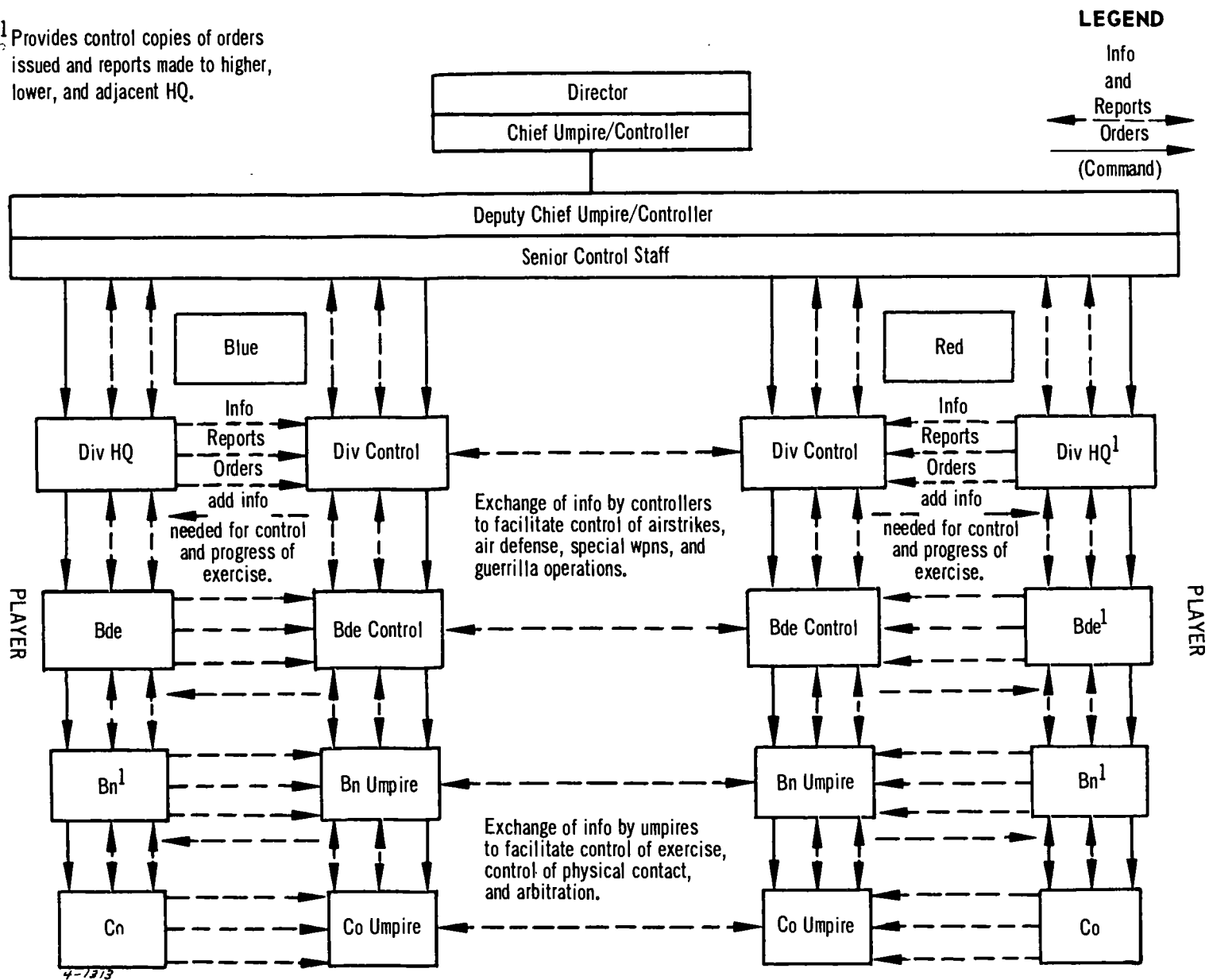


Figure 3. Flow of information and orders, control and umpire system.

is, given to the player whether or not he requests it or seeks it; and some is provided on a demand basis only, that is, when the player requests the information from the controller or seeks it through his intelligence effort. Controllers do not command player echelons nor do they pass instructions to players with command authority except when the headquarters is functioning in a dual capacity as the senior control headquarters and as the headquarters commanding the participants in the exercise. Controllers become thoroughly familiar with the plans and operational procedures of the units they control.

85. Umpire Function

The umpire function is principally one of arbitration and judging. Like the controller, the umpire stays abreast of the situation, applies judgment, and "paints the picture" of what has happened to the units on the ground. Umpires are present at battalion and below as shown in figure 3, and perform the control function at these levels. The umpire reports what has happened through umpire/control

channels and receives information and instructions relating to his control function. Like the controller, he depicts for the unit what it cannot observe because of simulation in the exercise. The umpire maintains contact with the opposing force umpire to anticipate contacts and to rule properly on the actions.

86. Evaluation Function

Although the evaluation function is separate and distinct from control and umpiring, it is normally incorporated in the umpire and control system. A separate system may be required when the subjects for evaluation require lengthy and meticulous observations or voluminous and detailed reports, or require a degree of knowledge which the average officer or enlisted man does not possess. In the conduct of an Army Training Test, the evaluation function requires experienced umpires and time for the umpires to make notes or execute questionnaires during the conduct of the test. In other tactical exercises, the evaluation function serves the purpose of assisting the participating units in deriving training benefits from the exercise.

Section III. ORGANIZATION FOR CONTROL

87. Organization for Exercise Control

a. A typical organization for exercise control is shown in figure 2.

b. This organization is suitable for detailed exercise planning in accordance with the scenario and exercise directive, exercise support, control planning, execution of exercise plans, and performing the control function.

c. Functions and responsibilities of individuals and elements within this organization are listed in subsequent paragraphs.

d. The control organization is based on the requirements of a particular tactical exercise. It is designed to parallel the player elements participating in the exercise. The principal advantage of the control organization within the framework of a tactical exercise is twofold. First, training of player units and staffs is enhanced by concealing situations from their advance knowledge. Secondly, player staffs can continue normal activities while the exercise is being prepared.

88. Exercise Director

The exercise director plans the exercise, assembles and organizes the necessary support for the exercise, assembles the participants, conducts the exercise,

and terminates it. Although he does not participate in the operations of the opposing forces, he acts as superior commander of both forces, the umpire/control group, and the test and evaluation group. He presents the situation; initiates and coordinates the planning and preparation for and execution of the tactical phase; and plans, coordinates, and recommends requirements for test and evaluation and supervises their interjection into the play of the exercise. He supervises the return to home stations of players, controllers, umpires, and support elements and is responsible for the preparation of final reports. In small tactical exercises, the exercise director and the chief umpire/controller may be the same person.

89. The Exercise Staff

The exercise staff assists the exercise director in the planning, preparation, and conduct of the exercise.

90. The Support Organization

The support organization is formed to provide support for the exercise over and above that provided by the player units in the exercise. It supports the exercise headquarters and the control and umpire elements not attached to player units for support.

The support organization provides support to visitors, observers, and representatives of information media as outlined in paragraph 57. It provides support in acquisition of real estate and maneuver rights, claims and maneuver damage, and safety activities and provides combat service support for the participants in the exercise. It provides the additional administrative functions and services as required.

91. Chief Umpire/Controller

The chief umpire/controller commands the control staff and the subordinate control and umpire elements. In large tactical exercises, he is responsible for preparation of the control plan, other supporting plans assigned by the exercise director, and any checklists required. He is responsible for umpire and control training and the control and umpiring of the exercise.

92. Control Staff

a. The control staff is organized to assist the chief umpire/controller. Its organization is appropriate to the echelon of command (i.e., field army, corps, division, brigade, or logistical command) represented by the chief umpire/controller. Joint or combined exercises require a joint or combined staff organization at the highest control echelon.

b. In large exercises and maneuvers, the control headquarters is organized and begins to function as soon as the exercise directive has been published. It prepares the control plan and assigned supporting plans incident to the preparation for and conduct of the exercise. The control staff supervises the planning of subordinate control headquarters and monitors the planning of player headquarters.

c. There are two general approaches to organizing a control headquarters. In those headquarters which participate in or conduct several training exercises annually, it may be advantageous to organize a maneuver branch within the G3 section or a separate maneuver staff section. This branch or section then provides a nucleus for the control headquarters. An alternate approach is the organization of a control headquarters for each exercise, using as a nucleus personnel from within the headquarters responsible for the planning, preparation, and conduct of an exercise.

d. The control staff supervises the conduct of the exercise to guide the exercise along the general lines envisioned in the scenario. In the execution phase, the control staff—

- (1) Receives reports and information from subordinate player and control elements.
- (2) Issues orders and instructions to subordinate control headquarters to provide control guidance over and above that contained in the control plan.
- (3) Represents higher headquarters, adjacent units, and other units and activities not playing in the exercise. This technique affords realism for the player headquarters in the interchange of staff information and reports, facilitates the issuance of orders by the senior control headquarters, and provides for the receipt of orders by player headquarters in a normal command relationship. It precludes the lateral issuance of orders by a subordinate control staff to its corresponding player headquarters. Orders are only issued through command channels. Control staffs do not give direct orders to players concerning any aspect of the exercise except when representing a higher headquarters in the line of command which is not playing.

93. Subordinate Control Headquarters

a. The chief umpire/controller at each echelon in the control organization should be senior to the chief umpire/controller at the next lower echelon. This provides a clearly defined command relationship in the control organization. Appropriate ranks for chief umpire/controllers are—

Army Group.....	Major general or brigadier general
Field Army.....	Brigadier general
Corps.....	Colonel
Division.....	Lieutenant colonel
Brigades, regiments, groups, installations, or equivalents.	Lieutenant colonel or lower com- missioned ranks as desired:

b. The organization of subordinate control headquarters should parallel that of the player headquarters being controlled.

c. On receipt of the control plan (or planning guidance) from the next higher control echelon and the exercise directive published by the counterpart headquarters of the participating unit, the subordinate control headquarters prepares its control plan and supporting documents. It further provides an outline plan and planning guidance to the next subordinate control echelon.

d. During the exercise, subordinate control headquarters enhance tactical realism by representing adjacent or lateral agencies, units, and activities

which are not playing in the exercise and which are appropriate to the echelon being controlled.

e. Control headquarters have the capability to pass reports, information, and instructions up, down, or laterally during the conduct of the exercise. This capability has two important aspects. The first is staff reaction time which includes staff coordination and the second is communication, both in speed and volume. Control headquarters must possess the capability to secure information, process it, and arrive at decisions or recommendations in sufficient time to serve the requirements of the exercise.

f. Control headquarters are manned to function continuously or on a basis comparable to that of the player headquarters they are controlling. Control staffs must possess quality and experience comparable to their opposite player staffs.

94. Player-Controller Relationships

a. Players and controllers at all levels conduct the exercise under simulated combat conditions and apply realistic factors to the extent possible.

b. Much of the play of an exercise is self-sustaining. Players are expected to take action required by their exercise positions. These actions are the same as the ones performed in combat. Data injected by controllers are processed by players in accordance with player operation plans, standing operating procedures, and the prescribed duties and responsibilities of the player positions.

c. Players are required to provide exercise information to headquarters other than their own. For example, there is a requirement to disseminate information obtained from air reconnaissance to all

interested agencies. Participants at all levels are interested in certain aspects of this information and must be given the opportunity to play the information thus obtained.

d. Supporting plans for the exercise are distributed to the chief umpire/controller at each echelon in the control organization and marked FOR CONTROLLERS ONLY. Controllers safeguard the information contained in these supporting plans from player personnel at all times, disseminate it to control staff members on a NEED-TO-KNOW basis, and divulge it to players only as a part of exercise play. These limitations are not intended to restrict necessary controller-player coordination for the purpose of enhancing the overall efficiency during either the planning or conduct of the exercise.

e. Controllers prepare in advance a checklist of actions to take and items to emphasize. These checklists are based on the training objectives and scenario of the exercise and are appropriate to the headquarters with which the controller is associated.

f. Control plans for each exercise do not necessarily prescribe all the control action required. Control headquarters at subordinate echelons add detail to the control plan from higher headquarters in accordance with anticipated player actions to enhance realism and training.

g. Shortages of personnel and equipment or other economies may, on occasion, require some players to participate in a dual player-controller status within a headquarters. When participating in this manner, the player performs in his normal functional relationship with other players. Since he has access to "CONTROL ONLY" information, he monitors his own actions to preclude compromising information.

Section IV. MAP MANEUVERS

95. Control Organization

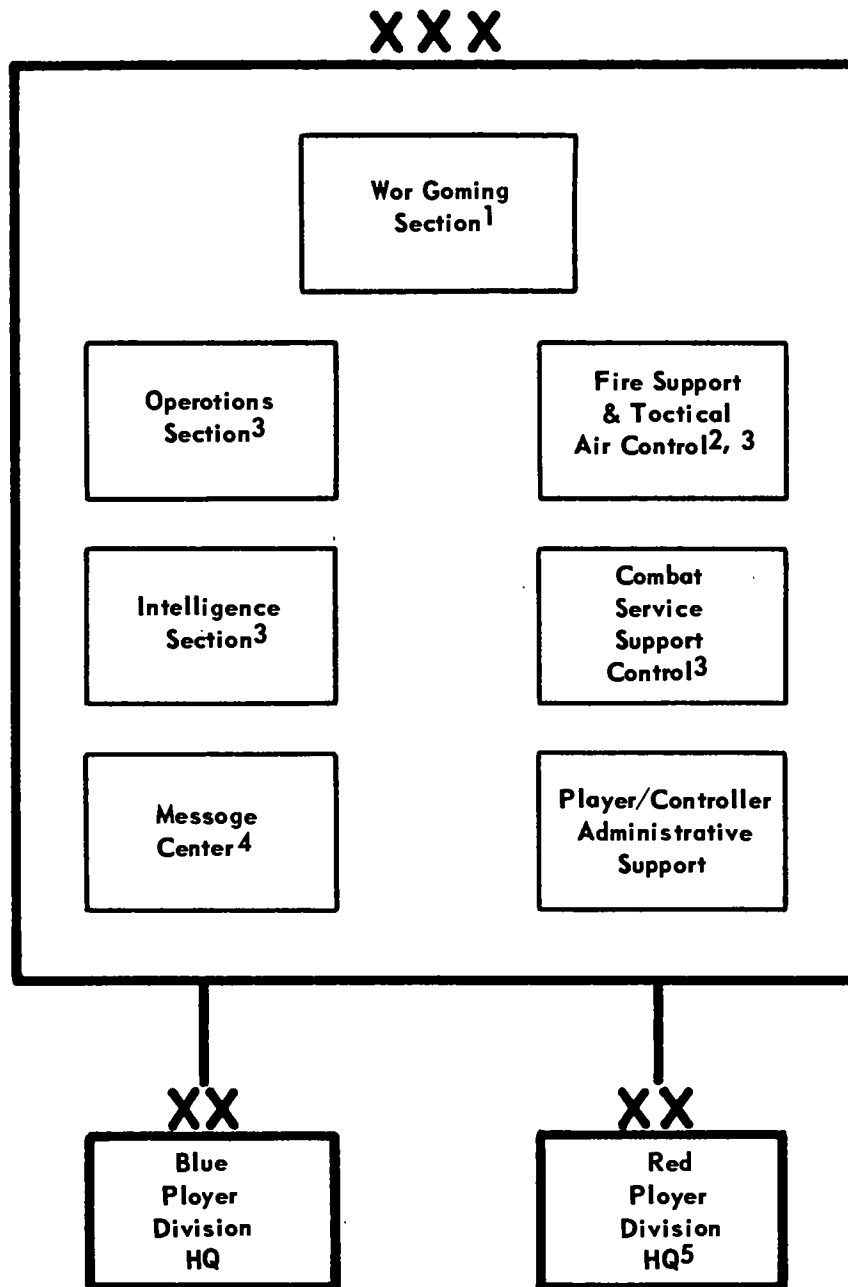
A typical control organization for the conduct and control of a two-sided map maneuver is shown in figure 4. The duties and functions of the war gaming section and the intelligence, personnel, operations, logistics, and civil affairs aspects of control embodied in the control group are discussed in subsequent paragraphs.

96. Function of Control in Map Maneuvers

a. The players are presented a general and special situation and a requirement. The players solve the requirement and submit their orders and instructions to the control group. The control

group evaluates the player orders, deploys and moves the player forces, and war games player actions. The results are fed back to the players as reports, information, and intelligence which combine to create a new situation and subsequent requirement. The players solve the new requirement. The process is repeated until the exercise is terminated.

b. When making announcements, the controllers consider which division staff section (player) would be primarily affected by the information under actual battle conditions. These announcements are designed to make the personnel of the player division



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- ¹See figure 5 for sample layout.
- ²May be organized as a tactical operation center to parallel the DTOC.
- ³Includes superior, lateral, and subordinate headquarters representation as needed.
- ⁴Telephone and teletype communication is also provided players and controllers as needed.
- ⁵In one-sided exercises, the functions and activities of the opposing force (Aggressor) are performed by control personnel.

Figure 4. Map maneuver—corps controlled, division players.

aware of the tactical and logistical situations, both friendly and enemy, and civilian reaction.

c. Controllers avoid interfering with or harassing player personnel. However, umpires are allowed free access to player division facilities to perform their assigned duties.

d. The control group renders prompt and logical rulings for all tactical and logistical situations that arise during the maneuver play. When contact is made between the opposing forces, the controllers allow the situation to develop until a tactical ruling is indicated or required. These rulings are based on relative firepower, tactical employment, logistical support, dispositions, cover, concealment, terrain, fields of fire, surprise, and maneuver. Controllers do not make tactical decisions that are the responsibility of the player commanders.

e. The controllers decide whether either force is able to advance and portray the situation accordingly. If, for example, the situation is such that the unit would not be able to advance in actual combat, the controllers "paint the battle picture" to indicate intense and accurate hostile fire. When appropriate, controllers portray masses of refugees and displaced persons blocking main avenues of approach as effective deterrents to the unit's ability to conduct operations successfully. If the unit can advance, the controllers depict appropriate enemy fires and activities. This simulation gives the commander information that should lead to a decision to advance.

f. Frequent requests are received from the players for the allocation of additional combat means (troop units and nuclear weapons) and combat service support means. These requests are acted on by the chief umpire/controller personally. The overall effect on the maneuver is carefully considered before additional means are allocated. Additional means are not allocated simply because it appears that a division is about to lose the battle.

g. Since commanders are on the receiving end of control activities, they are frequently in the best position to first detect unsound control activities. These unsound activities may relate to excessive timelags, inadequate flow of intelligence, inadequate knowledge of the dispositions of their subordinate units, improper time-space computations, unrealistic assessment of casualties and damage, and poor control decisions. The chief umpire/controller follows through promptly in the correction of bona fide complaints to resolve little problems before they become big ones. He thereby establishes policy

for future control activities and maintains the realism of the map maneuver.

h. Periodic briefings are conducted for coordination within the control group, particularly coordination between the various Red and Blue controllers and the war gaming section. These briefings cannot be predetermined by a rigid time schedule but are geared to the development of critical incidents. Examples of critical incidents are major penetrations or envelopments which have reached a critical stage, major defensive forces driven from position, employment of nuclear weapons, announcement of policies on control procedures and techniques, and major changes in player plans.

97. Intelligence Control

a. The realism of the maneuver is largely contingent on the activities of the intelligence control section. Intelligence control provides player intelligence personnel with all the information and intelligence they would acquire in actual field operations from sources and agencies under their control as well as from adjacent, higher, and subordinate headquarters. It uses all realistic means to transmit information and intelligence to players. Examples are captured documents, intelligence summaries, periodic intelligence reports, spot reports, artillery observer reports, shell reports, line crossers, reports from aggressor agents, defectors, and refugees, statements of civilians, reconnaissance reports, prisoner of war interrogation reports, order of battle reports, subordinate unit intelligence reports, tactical air reports, air observation posts, technical intelligence reports, and US Army Security Agency reports. Aggressive intelligence collection by player G2's and S2's is stressed since much of the information and intelligence acquired by player intelligence personnel are a direct result of their specific orders and requests. Information is also provided automatically in the form of periodic intelligence reports or spot reports, in accordance with standing operating procedures.

b. Intelligence controllers visit player G2's (S2's) frequently. These visits are used to release additional information and intelligence and to check the status of player intelligence situation maps.

c. Intelligence control maintains at least two enemy situation maps. One map portrays all information and intelligence released to the Red players (Blue units and installations) and the other portrays all information and intelligence released to the Blue players (Red units and installations). It is imperative that the situation maps be current at

all times to avoid unintentionally conflicting releases to players.

d. Although all agencies in the control group release information to players, the chief intelligence controller coordinates the release of all information and intelligence on enemy forces and characteristics of the area of operation. The intelligence releases are coordinated, approved by the chief intelligence controller, and recorded on the appropriate enemy situation map.

98. Operations Control

a. Operations control represents commanders of all combat units subordinate to the echelon playing the exercise as well as the operation sections at adjacent and higher echelons. Operation controllers actively command and fight the brigades and battalions of the opposing divisions.

b. Operations control executes the tactical missions directed by the players. It reports the actions taken to the players and to the war gaming section. This section war games these actions and reports the results back to the players through the operation controllers. Operation controllers supervise the activities of the war gaming section.

c. Maps are maintained in operations control to show the tactical situation of the opposing divisions. Operation control maps should accurately portray the status of all units down to and including units of company size. Additional maps are provided to aid the planning of the controllers representing the brigades, battalions, and other commanders in the execution of missions assigned by the player divisions.

d. Operations control coordinates with—

- (1) The war gaming section (par. 103) so that—
 - (a) The control map accurately portrays the status of units.
 - (b) Proper relative combat power ratios are maintained.
 - (c) Movements are taking place as planned and at rates of advance established for the exercise.
- (2) The artillery controllers to agree mutually on the status and amount of artillery support.
- (3) The player division personnel so they know the location of their subordinate units and the progress of their attack or defense. Overlays are used extensively for this purpose.
- (4) The intelligence controllers to determine the enemy situation so brigade and bat-

talion plans may be developed in a logical manner.

- (5) The personnel, logistics, and civil affairs controllers so the impact of these functions can be considered in the development of plans and orders.

e. Controllers representing commanders of Blue and Red divisional brigades and battalions actively plan, command, and fight their units as if the operation were taking place on the ground. They exercise a commander's normal responsibilities and initiative by—

- (1) Attending division planning conferences.
- (2) Preparing plans based on missions assigned by the division commanders. These plans may be brief and in outline form. They must be submitted to division as a means of keeping division players informed on what their subordinate units are doing.
- (3) Making recommendations to division for the successful accomplishment of the division mission.
- (4) Requesting fire support (air, artillery, and nuclear weapons).
- (5) Committing reserves.
- (6) Providing the division with situation reports to keep division players aware of the status of their subordinate units.

99. Combat Service Support Control

a. Combat service support control represents the commanders of combat service support units subordinate to the echelon playing the exercise as well as the logistical, personnel, and civil affairs sections at adjacent and higher headquarters. It is responsible for the planning and execution of combat service support missions assigned by the players.

b. Logistical controllers verify that tactical actions taken by players are logistically feasible. Logistical deficiencies are permitted to have full impact on the tactical situation. Realistic time and space factors are applied in the displacement of logistical support units and installations and in supply play. As a rule, maintenance cannot be played completely but evacuation and repair of damaged equipment can be required. Losses caused by opposing player actions are assessed against the logistical support units.

c. Civil affairs controllers insure that civil affairs and civil affairs activities are considered in all tactical play. Due consideration is given to the existence of supplies, labor, and facilities in the area which the player units can use in the accomp-

ishment of their assigned missions, and to the use of these assets to overcome combat service support deficiencies. Appropriate play within civil affairs functional areas, such as displaced persons, public health, civil supply, and civil defense is permitted to have realistic impact on the tactical situation.

d. Personnel controllers generate play in the areas of maintenance of unit strength, personnel replacements, morale activities associated with the combat zone, and miscellaneous personnel actions. Among the latter, awards and decorations resulting from combat actions and promotions to fill combat losses are appropriate. Controllers request information and reports in these areas and require players to prepare plans and requests to overcome deficiencies injected into the play of the exercise.

e. Combat service support control maintains situation maps for generally the same purposes as intelligence and operations control.

f. Combat service support controllers frequently visit personnel, logistics, civil affairs, and appropriate special staff sections of the player divisions.

100. Fire Support Control

a. Fire support control represents commanders of all fire support units and elements subordinate to the echelon playing the exercise and all the elements of the corps and field army tactical operation centers involved in coordination of fire support, the corps artillery fire direction center, and the air support operation center (ASOC). Tactical air is discussed further in paragraph 101. The control of nuclear weapon play is described in chapter 8. Control criteria for the play of nonnuclear fire support, including chemical and biological weapon play, are discussed in chapter 7.

b. Fire support controllers process the requests for fire made by player units. They inform the war gaming section of those requests which are approved or provided and obtain from the war gaming section the results of the fire. The war gaming section integrates the effects of fire when determining relative combat power and assesses casualties and damage. The war gaming section reports the effects of the fire to the players through the fire support controllers.

c. Fire support controllers maintain situation maps to portray the location and status of all fire support means.

d. Fire support control coordinates with—

(1) The war gaming section so that—

(a) The control map accurately portrays

the location and status of fire support means.

(b) The computers are informed of the fire support situation and relative combat power ratios are computed.

(2) The operation controllers to agree mutually on the status of fire support and its employment.

(3) The players so that they know the location and status of their organic, attached, and supporting fire support means.

(4) The intelligence controllers for approval of information and intelligence to be released through fire support channels.

(5) The combat service support controllers so that the impact of their functions may be considered in determining the effectiveness of fire support.

e. Fire support controllers establish a check system so that fire support units do not expend munitions in excess of those in basic loads, provided by announced available supply rates, and allocated as in the case of nuclear weapons. Realistic time and space factors are played in ammunition resupply.

101. Tactical Air Control

a. Tactical air control represents the tactical air force for the echelon (e.g., division) playing the exercise, the G2 air and G3 air at corps and field army, the S3 air of all subordinate units, the intelligence acquisition capability of both tactical air and Army aviation, the military intelligence battalion (air reconnaissance support), the air liaison officers and forward air controllers with the players, and the combat support functions of Army aviation.

b. Tactical air controllers process requests for offensive air and air reconnaissance missions initiated by players. They fly those missions which are determined to be logical and appropriate and assess predetermined timelags. The determination of intelligence developed by air missions requires careful correlation between the routes flown and the disposition of units and installations portrayed on the control map. Tactical air controllers must use their professional judgment to evaluate the vulnerability to detection of units and installations.

c. Tactical air controllers—

(1) Inform all controllers of the status of air-strikes.

(2) Maintain an air mission status chart for both player groups on close air support and air reconnaissance missions. The chart shows missions which have been

flown, missions in process, missions pending, and future aircraft availability.

- (3) Maintain a close air support situation map and an air reconnaissance situation map of suitable scale. The latter map portrays the routes and areas which are currently being searched and those to be searched in the future. This map also portrays all intelligence released to layers which is beyond the scope of the maps maintained by operation controllers.

d. Tactical air control analyzes the general and special situations and determines a reasonable allocation of air support sorties to be made each day to players. Concurrence is obtained from fire support control, the air liaison officer, and intelligence control on the number of close air support and reconnaissance sorties to be allocated to the players.

e. Close air support sorties acquire information which may be disseminated to the ground player units concerned through the ground liaison officer teams located at the airfields. Tactical air control releases the information that would be logically

acquired after coordinating it with intelligence control.

102. Miscellaneous

a. Additional control is added as necessary in the areas of combat, combat support, and combat service support to expand the scope and simulation of play in the map maneuver. Typical examples are air defense controllers for air defense operations; guerrilla controllers for guerrilla operations; provost marshal controllers for prisoners of war, traffic control, and straggler control; engineer controllers for combat engineering support in rear and forward areas, including the play of obstacles, main supply route and access road improvement, use of bridging, and employment of atomic demolition munitions (ADM's); and medical controllers for control of evacuation means and the handling of mass casualties.

b. Additional situation maps are required and coordinating procedures are specified when additional factors are added to the exercise.

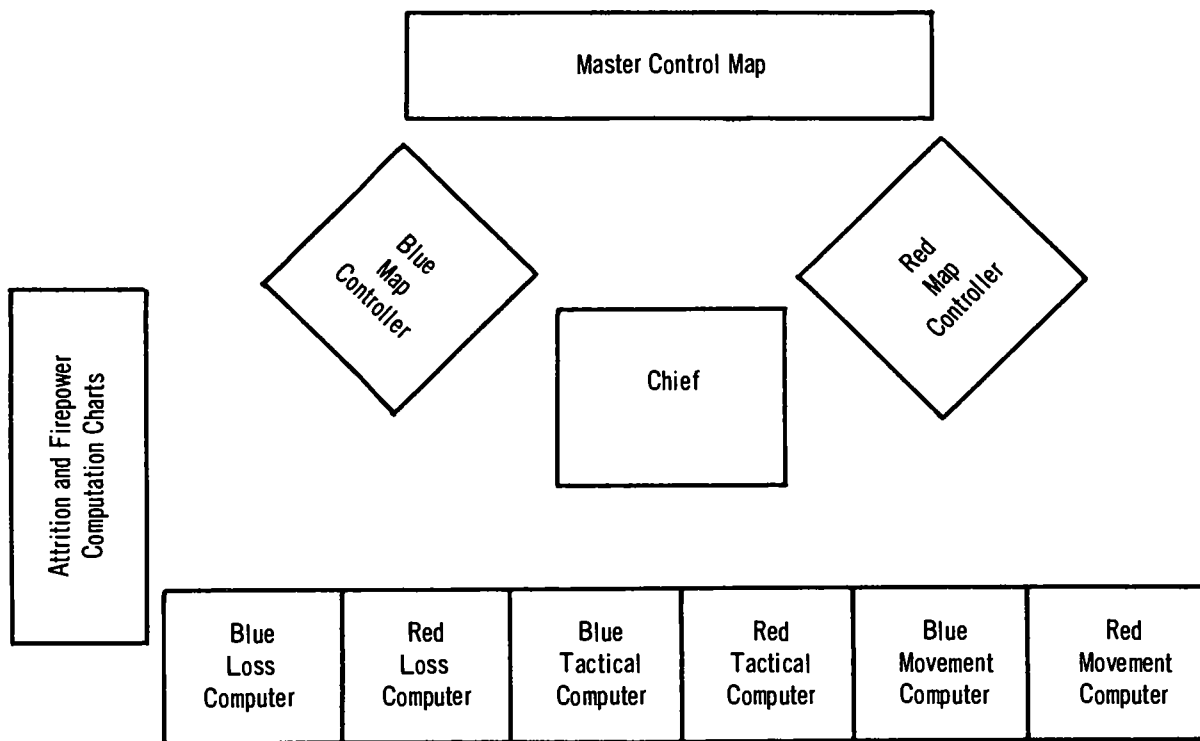


Figure 5. War gaming section (sample layout).

103. War Gaming Section

a. A war gaming section is established within the control organization to assist controllers in the visualization of the battle, to perform the necessary computations, and to apply necessary tactical judgment in order to determine what happens as a result of encounters between player elements. The section maintains the master control map. The section supports all controllers under the staff supervision of operations control. A typical organization and layout of the section are shown in figure 5.

b. The principal function of the section is to determine the most probable outcome of actions and orders initiated by players. This determination is made using the control and umpiring criteria in chapter 7, the war gaming techniques in appendix IV, and —

- (1) Professional judgment.
- (2) Strict impartiality between player groups.
- (3) Objective analysis of the actions and orders of the player force.
- (4) Concept of control.
- (5) Nuclear play.
- (6) Time and space factors.
- (7) Combat power and rates of advance criteria.
- (8) Attrition through application of casualty and damage assessment criteria.

c. Action by the war gaming section results in an exact determination of the current status of player forces. This status is then portrayed on the master control map. There is only one master control map and all controllers refer frequently to it for the current situation. The importance of properly maintaining this map by the war gaming section cannot be stressed too strongly.

d. The chief of the war gaming section, in coordination with the chief umpire/controller, makes major decisions which affect the outcome of the entire maneuver. Typical decisions are—

- (1) Rates of advance for units which have successfully penetrated or enveloped the enemy defenses.
- (2) Major casualty and damage assessments resulting from the employment of nuclear weapons or massed airstrikes.
- (3) Resolution of critical time and space factors, such as the time required to employ major combat units in the areas of operation.
- (4) Determination of the breakpoint or ineffectiveness of player units.

(5) Evaluation of shock action.

(6) Resolution of conflicts between loss, movement, and tactical computers.

e. Rehearsals of the techniques and procedures employed by the section are conducted before the map maneuver starts.

f. The map controllers—

(1) Maintain the master control map as directed by the chief of the section and the tactical and movement computers. They portray, using appropriate symbols, all player activities and units. Symbol kits are provided for this purpose. Successful map controllers employ ingenuity and imagination to portray the tactical situation on the control map. The following are some techniques for maintaining a realistic control map—

- (a) Colored ribbons and arrows are used to portray units in motion. The length of the ribbon or arrow conforms to the actual road space which the column occupies.
- (b) Reconnaissance screens are portrayed by appropriately colored ribbons and arrows.
- (c) The size of the area covered by airstrikes cannot be predetermined as it depends on the number of aircraft employed and the configuration of the target. When the appropriate size of area is determined, controllers cut the proper size rectangle or other shape from paper and post it.
- (d) Nuclear, mushroom-shaped symbols are prepared to represent nuclear strikes of various yields.
- (e) Areas contaminated by chemical and biological attack are plotted to show the shape and size of the attack. These are color coded and labeled for different agents (FM 21-30).

(2) Portray on the control map the progress of units in motion as directed by the chief of the section and movement computers.

g. The tactical computers—

- (1) Maintain a current record of the firepower scores of all combat units on charts provided for this purpose.
- (2) Receive units from movement computers when the units begin deploying for combat. They determine relative combat power ratios between opposing forces and the rates at which units may advance. They verify

that the results of their computations are accurately portrayed on the control map by the map controllers.

h. The loss computers—

- (1) Assess and maintain a record of casualties and major items of equipment damage resulting from all causes. Losses and damages so assessed are recorded on charts provided for this purpose. Losses and damage are assessed on all units to include companies and units of comparable size. They provide other controllers with the current strengths of units.
- (2) Use techniques, procedures, and criteria given in chapter 7 and appendix IV.

i. The movement computers—

- (1) Compute and track all tactical troop movements until contact is imminent. Units are then passed to the tactical computers. Noncontact movement record worksheets are provided to assist movement computers in the organization of their work. In addition to mathematical computations, movement computers apply professional judgment to assess delays caused by air-strikes, artillery fires, nuclear fires,

chemical and biological attacks, obstacles, and traffic conflicts.

(2) *Coordinate with—*

- (a) Logistical controllers for the movement of combat service support units to determine if conflicts exist between combat, combat support, and combat service support unit movements.
 - (b) Map controllers so that the control map accurately portrays the status of units in motion.
 - (c) Tactical computers to provide a smooth transition of units between movement computers and tactical computers as the contact of units becomes imminent (approximately when units begin deploying for combat).
 - (d) Players to clarify ambiguous or incomplete march orders.
- (3) Maintain a supplemental map to plot and track units in motion which have not yet reached the area covered by the control map. When moving units reach the area covered by the control map, they transfer the symbols for these units from the supplemental maps to the control map.

Section V. COMMAND POST EXERCISES

104. General

Many of the aspects of control for the map maneuver that are covered in paragraphs 95–103 apply equally to the CPX. Subsequent discussion in this section expands on the material in paragraphs 95–103 that pertains to the CPX.

105. Control Organization

a. A typical control organization for the conduct and control of a one-sided CPX is shown in figure 6.

b. The field army echelon of control—

- (1) Performs the overall control function for the exercise.
- (2) Commands the subordinate echelons in the control organization.
- (3) Represents field army headquarters, communications zone headquarters and units, and other nonplaying agencies and activities to subordinate corps, divisions, and combat service support players.
- (4) Exercises command of Aggressor forces employed against the field army.

c. The corps and division echelons of control—

- (1) Perform the control function appropriate

for the echelon, including command of subordinate control echelons.

- (2) Represent all nonplaying corps and field army units and, for purposes of rear area security and area damage control, represent all nonplaying units located in the corps and division rear area.
- (3) Command Aggressor forces allocated to them by higher (field army and corps) control echelons.

d. The field army combat service support echelon of control—

- (1) Performs the control function for field army combat service support units, installations, agencies, and activities playing in the exercise.
- (2) Represents subordinate units so that orders may be received from players and normal information and reports may be provided to players from these sources.
- (3) Coordinates the play of events, tactical action, and damage resulting from Aggressor action in the field army rear area with the field army controllers.

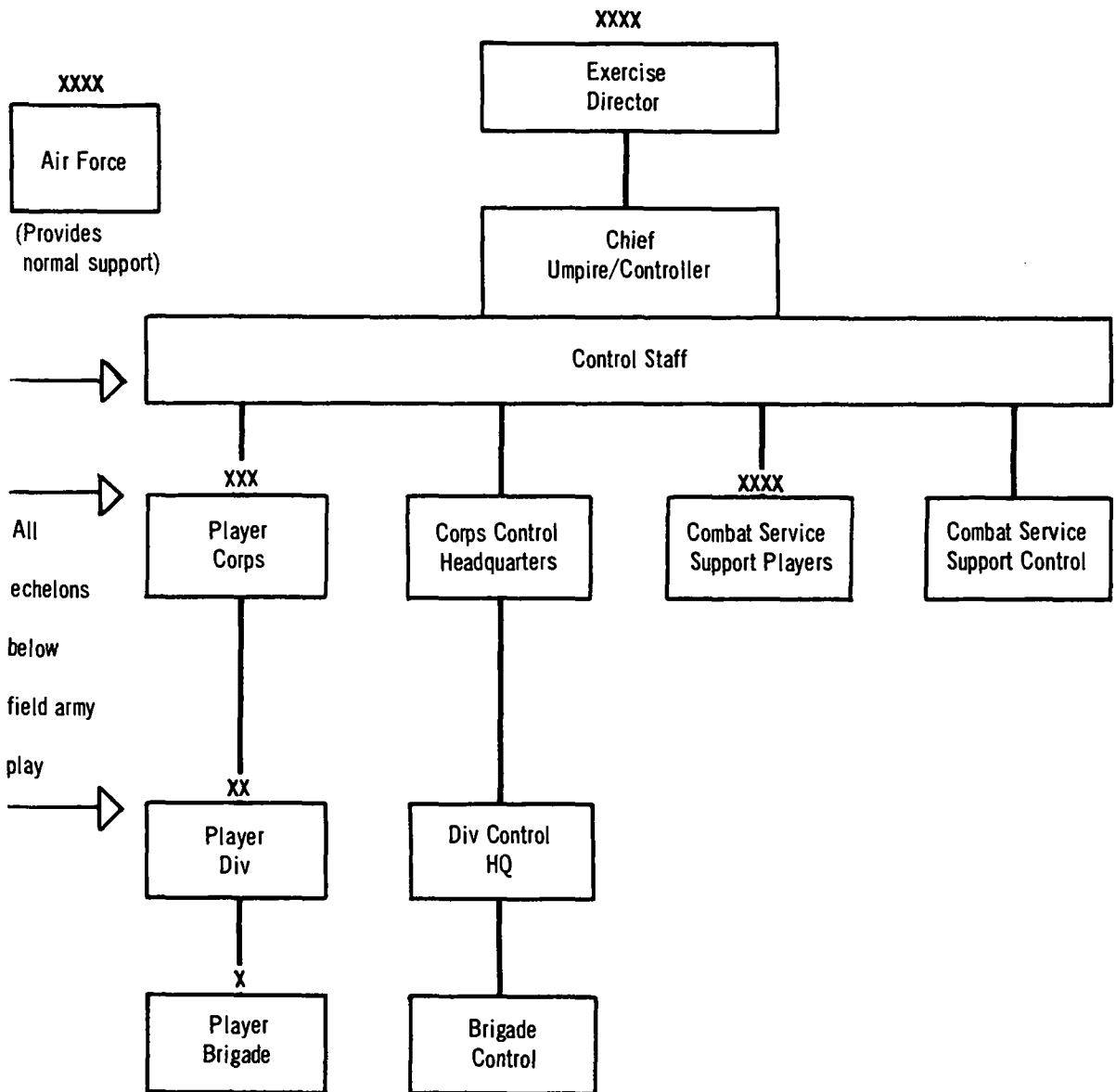


Figure 6. Organization for control, field army-conducted CPX.

e. The brigade echelon of control—

- (1) Performs the control action for brigades playing in the exercise.
- (2) Commands Aggressor forces allocated to it by the division control echelon.
- (3) Represents subordinate battalions of brigades so that orders may be received from players and normal information and reports may be provided to the player brigades from these sources.
- (4) When located on the field army flank, provides appropriate information and liaison from adjacent nonplaying forces.

106. Functions and Activities of Control

a. Control represents friendly units that are not playing. Gaps within player echelons are filled by controllers to avoid incomplete play. This is particularly, but not exclusively, true of intelligence and intelligence agencies. Control represents a unit which normally goes to a field army supply point for support in order to maintain realistic logistical play. Control reports and information from non-playing units need not always be correct or accurate. Erroneous, incomplete, or faulty reports are purposely injected for maximum training benefit.

b. The chief umpire/controller at each participating echelon serves as the chief umpire/controller and as the Aggressor commander. His control staff is organized to provide him with information necessary to permit the proper direction of Aggressor resources. Aggressor forces are employed to attain the exercise objectives announced by higher headquarters. Such employment does not preclude the preparation of planned events or situations to be developed according to the Aggressor scenario. It permits flexibility of Aggressor action and free play of the exercise.

c. As shown in figure 3, the CPX controllers obtain orders, reports, and information from players. The controllers depict enemy and player actions and counteractions, war game results of all actions, and prepare the necessary messages and reports incident to player actions. Information given to players is made to flow as realistically as possible. It should come from units in contact (played by control) and from the logical intelligence agencies.

- (1) The preparation of messages and reports is accomplished in two ways. Player reaction to the tactical plan, such as commitment of a major reserve at a certain time or place, is predictable. For short exercises and when control resources are limited, all reports, messages, and incidents are planned. For longer exercises in which all situations cannot be or are not desired to be planned, the control organization prepares some of the required reports and messages during the conduct of the exercise. However, regardless of the length of the exercise, messages, reports, and incidents are prepared prior to the exercise insofar as practicable because of the difficulty and confusion that can otherwise arise during the play. Prepared messages and reports also assure the continuity of action.
- (2) The control structure must permit quick shifts of control authority. Control of enemy or Aggressor formations has to be shifted up, down, or laterally within the control structure during the conduct of the exercise. When the reserve brigade of a player division is committed, the brigade controllers take command of the enemy forces against which the player brigade is maneuvering. Division control makes certain that this shift takes place.

d. Movement of Aggressor forces and the employment of Aggressor resources is based on appropriate control staff advice. For example, after intelligence controllers study player deployment and dispositions, they recommend a subsequent Aggressor action to operation controllers, who recommend the adoption of an Aggressor course of action to the chief umpire/controller.

e. Development and injection of Aggressor information is in accordance with the Aggressor scenario announced by higher headquarters. The scenario is part of the intelligence plan. It is published and distributed to subordinate control staffs. Based on the scenario, subordinate control staffs through brigade level prepare schedules of events for the timely insertion of messages to assure continuity of action.

f. Alternate and contingency plans for the employment of Aggressor forces may be prepared for possible use during the conduct of an exercise. Control staffs may recommend the adoption of an alternate or contingency plan based on the developing situation and requirements of the training objectives. Adoption of an alternate or contingency plan may require some adaptation for its implementation. Adoption and modification of an alternate or contingency plan are approved by the exercise director and coordinated with all agencies affected by the change in plan. In stimulating player activity, care must be taken to avoid creating problems that detract from the exercise objectives.

g. An important aspect of control in a CPX is the proper assessment of losses, delays, and penalties against both friendly and Aggressor forces and agencies. Although it is important to make losses as logical as possible, the objectives of the exercise remain the overriding consideration. Losses or delays may be assessed for the sole purpose of achieving exercise objectives.

- (1) In exercises which begin after the initiation of hostilities, the assessment of losses and penalties against both troop units and logistical installations is important in properly depicting the action between the opening of hostilities and the beginning of the exercise. Much of the information required in the initial situation of the exercise is prescribed by higher headquarters. However, it may be necessary for subordinate commanders to establish a specific condition, using attrition factors in the form of percentages established by higher headquarters.

- (2) Losses are assessed as they might occur in the situation being depicted. For example, in the case of an infantry division described as being 70 percent effective, it is unlikely that the 70 percent would be uniform throughout the division. It is more likely that one or more battalions would have suffered heavy casualties in relation to other units of the division. This same type of assessment applies to combat service support units and installations.

h. Control staffs at all levels monitor player actions, situations, and plans. This is accomplished in the following ways—

- (1) Adherence to the scenario.
- (2) Close liaison with players and player headquarters by visits and use of liaison officers.
- (3) Attendance at player briefings and conferences.
- (4) Receipt of all player messages and documents.
- (5) Use of a schedule of events.

107. Operations Control

a. Operations control assists the exercise director in preparing the control plan, prepares messages and data to support the scenario, and, in coordination with intelligence control, executes the plan for Aggressor operations.

- (1) Aggressor and player actions are begun in accordance with the scenario and setting of the exercise. Controllers inject information and intelligence into player channels, thereby causing players to take those actions which they would take in an actual operation. Injections are made at the level where the information or intelligence would most likely originate.
- (2) Material in support of the scenario is prepared in coordination with other control sections. Major events, such as large-scale nuclear strikes, are identified. Coordination is required so that all effects are incorporated into play and all ramifications of these effects are considered.

b. Major subordinate controllers assist in developing detailed scenarios and supporting messages and data based on the scenario and control plan for the exercise. Deviations from the exercise scenario are made only with the approval of the exercise director.

- (1) Controller actions may be designed to draw both friendly and Aggressor forces into situations resulting in the concentration of

forces. This provides a basis for testing the abilities of friendly intelligence agencies to locate suitable targets and gives commanders an opportunity to strike these targets with nuclear weapons before they have time to disperse. Controllers are also alert for concentrations of friendly forces that would be detected by Aggressor and react where feasible with Aggressor nuclear strikes. Allowances of an excess of nuclear weapons to either player force are not allowed since excessive use of these weapons could prevent the accomplishment of the exercise objectives.

- (2) The forward edge of the battle area (FEBA) should remain a trace at all times. There may be salients, surrounded units, and fluid situations impacting on both friendly and Aggressor forces.
- (3) Controllers at all levels assess the results of player operations against Aggressor forces and the results of Aggressor operations against player forces to make the scenario develop as logically as possible.
- (4) When general guidance for Aggressor action is given, e.g., "Guerrillas will attack logistical installations," controllers cause the action to be taken and determine the results based on player actions and capabilities and the logical outcome of the action.
- (5) When specific guidance for Aggressor action is provided, e.g., "The bridge at _____ will be destroyed on D+3 at 0900Z," controllers cause the action to occur as directed and attribute it to the most logical Aggressor capability. Intelligence control should develop the Aggressor capability to accomplish the event before it happens.
- (6) Controllers must consider the effects of Aggressor action on units adjacent to the unit being controlled. For example, prior controller coordination is required in implementing an Aggressor nuclear weapon attack when its effects will extend beyond the boundaries of the unit being controlled.

c. The territory occupied by Aggressor is divided into areas for control of the movement, tactical employment, and logistical play of Aggressor forces. This division of the Aggressor area normally corresponds to the area of interest and the area of influence of the corresponding player headquarters participating in the exercise. These areas are for

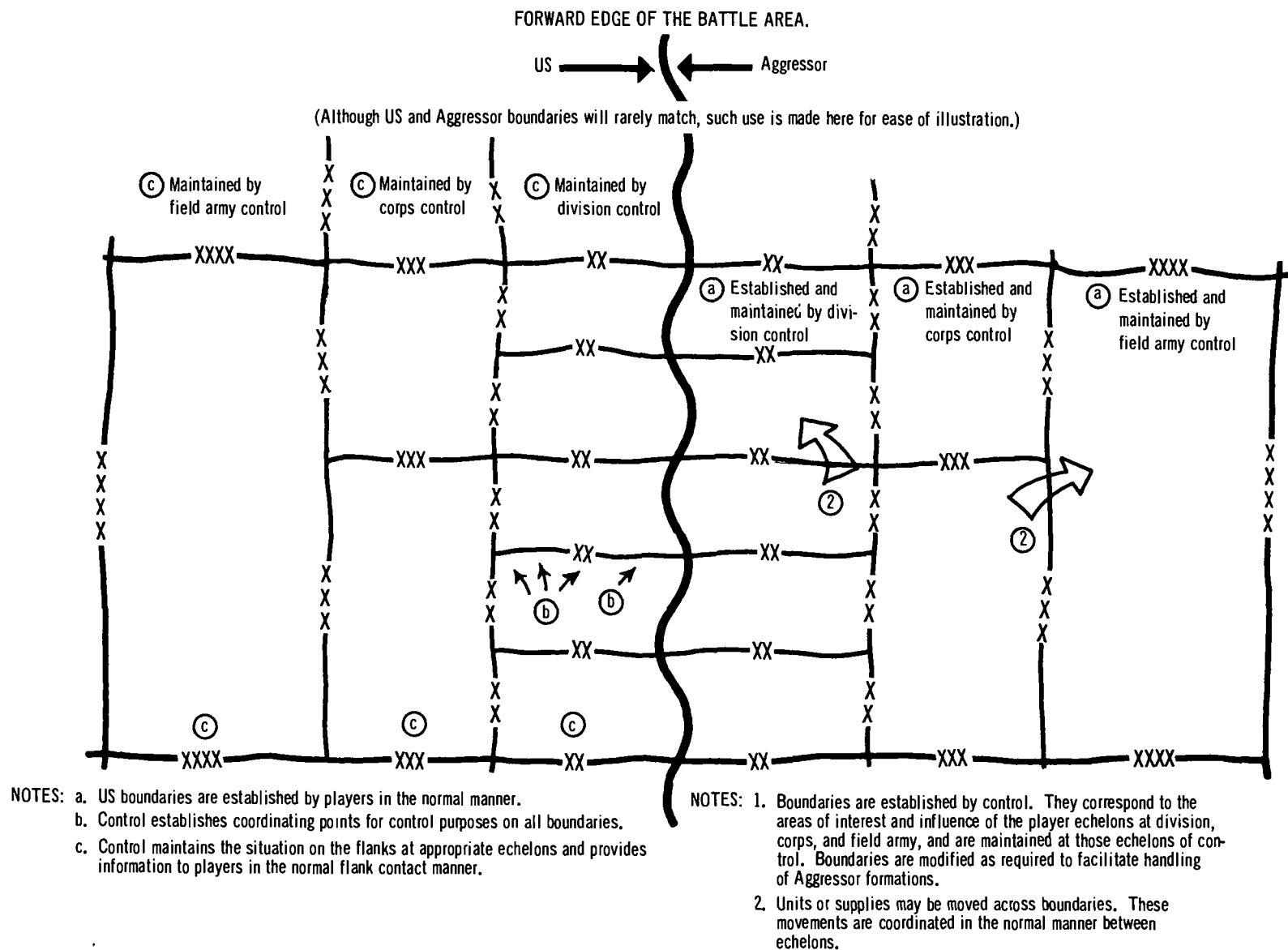


Figure 7. Area responsibilities of control echelons.

control purposes and do not limit the ability of player units to obtain information outside the Aggressor control areas. Coordinating points are established along major unit boundaries to permit controller coordination (fig. 7).

- (1) Each control echelon plays the location of every unit assigned within its area of responsibility in accordance with the scenario. If a controller desires to inject intelligence or information from locations outside his area of responsibility, he coordinates the information with the controller who has responsibility for the area.
- (2) As Aggressor units and supplies are moved forward or rearward over each boundary, they pass from one control echelon to another. For each unit or specific quantity of supplies so passed, the losing controller informs the gaining controller of the exact time, place, and status of the unit or supplies as they cross the boundary. Units may be passed laterally across boundaries with the concurrence of the controllers concerned.
- (3) Controllers play the location of Aggressor logistical installations necessary to support the Aggressor troops.

d. Aggressor activity can be used to govern player activity. If it becomes necessary to slow or hasten advances from time to time to stay within the guidance furnished by the scenario, this change of pace is accomplished by the employment of Aggressor reserves and nuclear weapons—withholding them to hasten player advances and committing them to delay player advances. Poorly executed friendly actions at lower levels may also delay player advances. Controllers keep abreast of both friendly and enemy plans, orders, and operations so that actions, when introduced, conform to the general situation and are within the actual capabilities of player and Aggressor forces. The consequences of all friendly combat actions are carefully evaluated so that the impact is reflected in Aggressor reactions. Controllers cause Aggressor units to respond promptly and appropriately to player nuclear strikes, maneuvers, and conventional fires. Credit is given for expeditious and effective employment of friendly units, and corresponding penalties are assessed for slow or inadequate reaction to combat situations. These credits and penalties are in the form of advantages gained or lost in the operation.

e. In the conduct of Aggressor operations, controllers at all echelons adhere to logical rates of move-

ment and employ units only within offensive and defensive capabilities and limitations for the given area of operations. Delays caused by defiles and player actions such as obstacles, demolitions, and artillery fires are carefully assessed. Similarly, controllers monitor player actions to the extent practicable to insure that they observe proper time and space factors. Disregard of these factors (i. e., abnormal speed of movement or inordinate defense frontages) is countered by the insertion of additional problem elements such as excessive straggling, lost columns, obstruction by refugees, enemy actions, demolitions, and sabotage.

108. Intelligence Control

a. General. There are two basic objectives in preparing the intelligence plan for an exercise. First, to provide players with a realistic enemy capable of conducting viable opposition to player forces. Secondly, to tailor intelligence available on the enemy (Aggressor) so that all intelligence staffs and agencies are fully exercised. Intelligence controllers assist in preparing the intelligence plan for the exercise.

b. Intelligence Controllers. Intelligence controllers at all echelons—

- (1) Prepare and introduce situations and events appropriate to their particular levels. These situations and events are designed to exercise players in all phases of intelligence activity, insure the logical development of intelligence play, generate full participation by all intelligence staffs and agencies, and use all intelligence sources and collection agencies. A sample of intelligence events is shown in figure 8.
- (2) Represent Aggressor forces and their activities (including guerrilla activities) within given areas of responsibility. They suballocate Aggressor forces as appropriate, and supervise the use of Aggressor forces (in conjunction with operation controllers) within their respective areas so that Aggressor actions are realistic and coordinated.
- (3) Represent nonparticipating friendly intelligence sources and agencies.
- (4) Create situations that require players to plan and direct intelligence collection activities, develop collection plans, essential elements of information (EEI), and other intelligence requirements (OIR).
- (5) Distribute copies of intelligence events and pertinent individual reports to controllers

Event numbers	Date-time group	Events	How, when, and by whom injected			Player reaction anticipated
			Controller	Method	Time	
9	* 051900 Apr 19__	* An explosion at pipeline pumping station site (coord) has been reported. A civilian (male) was found seriously wounded at the scene. He asked to speak with an intelligence officer. He is now in the (name) Hospital in (location).	* Army Combat Service Support	Tel msg	* 2100	* 1. Disseminate sabotage information. 2. Inform control staff that an investigation is being conducted to include interrogation of wounded man. 3. Request control staff to furnish results of investigation.
17	* 052200 Apr 19__	* The injured man made the following statement: "My name is Cesareo PLATRONE. I am dying and wish to clear my conscience. I have been working for (Aggressor) Intelligence Service. I was first contacted in 1957 in (location) by a man called Ramiro ENJUTO. He sometimes goes by the name of Eduardo BRAVO. ENJUTO said he worked as an interpreter for an American Intelligence agency. The (Aggressor) organization arranged for me to be moved to (location) in 19__ with a mission of penetrating _____ Headquarters and reporting military information. I received instructions from a man called Antonio VELLA. I have never seen him since all my reporting was done through an intermediary. I had reason to suspect that VELLA worked for (name of Aggressor Intelligence service). We used a radio transmitter in (location) for sending important messages. Such messages were encoded and sent only at 1907 hours. I was given the mission to destroy this specific part of the pipeline at 061730 April 19__. Something went wrong with the timer." (PLATRONE died before completing his statement.)	* (Same)	Report	* 2230	* 1. Dissemination by player of information of interest to subordinate units in whose area agents are operating. 2. Plan counterintelligence operations to follow-up investigative lead reference, Ramiro ENJUTO (alias Eduardo BRAVO). 3. Follow-up investigative lead reference Antonio VELLA. <i>Note.</i> Although play in this example is generated by the intelligence controller, the event itself has wider implications. Control would expect player to coordinate with logistical and operational staff elements and perform comparable coordination prior to release of the event to players. After control coordination, the event is placed in the schedule of events.
	*	*	*		*	* *

Figure 8. Sample intelligence events.

of the same staff and to other intelligence controllers in order to coordinate all intelligence activities, coordinate intelligence activities with other activities, and monitor player actions.

c. Interrogation Reports. Controller interrogation prisoner of war (IPW) elements have the two-fold mission of submitting interrogation reports to player personnel and simulating the evacuation of prisoners of war (PW's) to higher echelons by the physical transfer of related documents (normally copies of complete or fragmentary interrogation reports).

- (1) IPW reports are realistic and provide information the unit might expect to obtain from PW's, linecrossers, and refugees in combat. The information is related only to the assigned enemy forces. Reports may include information taken from documents and technical intelligence.
- (2) The intelligence plan specified the simulated PW capture rate. Contents of IPW reports are provided by the IPW controller.
- (3) Simulated evacuation of PW's from the capturing unit through intermediate units to the highest participating level conforms to the procedures in field SOP's. Evacu-

ation is accomplished by the physical transfer of copies of reports as prescribed in field SOP's. To make full use of an exercise period, incident lists report capture of a reasonable number of border crossers, such as guards or agents, during the intelligence preplay. Interrogation reports are furnished to players by the controller inserting the incident.

- (4) Where practicable, essential military police prisoner of war unit headquarters are manned. These units play the evacuation of PW's from the collecting points to the rear.

d. Captured documents.

- (1) Captured enemy documents are prepared by intelligence controllers and submitted to players in accordance with field SOP's. These documents may be injected through other than intelligence channels.
- (2) The evacuation of captured documents to higher echelons after injection is a player responsibility. In order to monitor player actions, the injecting controller coordinates all details of the injection with appropriate controllers at other echelons. A copy of the document is supplied to controllers concerned.

e. Captured materiel. See discussion of technical intelligence below.

f. Intelligence in special operations. Play is conducted by personnel under the supervision of the field army intelligence controller. Corps intelligence controllers may request the field army intelligence controller to inject information through these sources at any time during the exercise. Special operations may include intelligence collection units, aggressive counterintelligence, long range patrols, and use of all the capabilities provided through intelligence augmentation of the Special Forces units employed.

g. Communication and electronic intelligence. Electronic warfare and US Army Security Agency units and headquarters participating in the exercise normally participate as player-controllers.

h. Air strikes. See discussion of the intelligence implications of tactical air support below.

i. Counterintelligence control.

- (1) Counterintelligence activities are conducted in the fields of counterespionage, counter-sabotage, countersubversion, and counter-intelligence security services. These activities range, as required by the situation,

from overt to covert, passive to active, and defensive to aggressive. The objective is to generate a lively tempo of counter-intelligence activity during exercises to cause the broadest possible exchange of information and requirements among player military headquarters and participating civilian agencies. The nature of injected incidents restricts counterintelligence activity to paper play. Effective play is predicated on the planning and preparation of probable counterintelligence incidents. Unscheduled counter-intelligence incidents injected during an exercise are a means of supplementing the planned incidents rather than forming the main basis for play.

- (2) Biographical data on persons representing active members of various Aggressor nets operating in the exercise area appear in supporting documents of the intelligence plan. Each person is given an area of operations and either a specific mission or a specialty such as demolitions expert or code specialist. Some biographies bear a title, such as "OPERATION RED." Persons whose biographies bear the same title are agents of a common net.
- (3) Specialists are assigned tasks in their specialty. Aggressor agents operate in the location stated in their biographies. They are allocated to major subordinate commands according to the agent's target area and net. Agents can be moved into another sector by mutual agreement between intelligence controllers concerned and can be given temporary missions different from those stated in the biography.
- (4) Play begins by injecting either an event or information designed to stimulate the following types of action by the players:
 - (a) Transmit information to other military headquarters.
 - (b) Transmit information to civilian agencies.
 - (c) Request other civil and military agencies to act on investigative leads or clues.
 - (d) Request information from other civil agencies and headquarters.
 - (e) Plan and execute locally the counter-intelligence activities of surveillance, apprehension, interrogation, and development and use of information.

- (5) An event which is properly planned is self-generating after the initial injection by control. A player receives the injected event and performs certain required actions, such as those listed in (4) above. In most cases, the player action consists of planning certain physical acts and informing the controllers of details. The controllers feed back to players simulated results of the latter's simulated actions. This feedback results in further activity by players.
- (6) The following actions are taken in preparing events—
 - (a) Preparation of the initial event to be injected and designation of the specific time, method, place, and person responsible for injection (fig. 8).
 - (b) Evaluation of incidents to insure that they generate broad activity.
 - (c) Coordination of events with other controllers to integrate them into the play of the exercise.
- (7) Since exercises may not be long enough for players to accomplish many of the actions in counterintelligence investigations and operations, control is generous in the release of information so that a desirable volume of counterintelligence traffic develops during the exercise.
- (8) Players at each headquarters receiving the above information report to their respective controllers the action they would take to follow up clues in their areas. The controllers extract information from the applicable personality file published in the intelligence plan (or developed locally) and release it to players. These releases represent results of player activity. Each controller releases data that is of interest to his players, and adds some clues of concern to other areas. In this way a single injection started by the controller can result in activity for a large number of headquarters.
- (9) Controllers freely embellish information they release to furnish clues in other areas. This action need not be coordinated between controllers provided clues are confined to persons listed in biographies. The controller in the area receiving such a clue can handle it as a local action or in any other way which seems proper. When clues are expected to be transmitted from one area to another, the originating controller informs the receiving controller as far in advance as possible.
- (10) At the beginning of an exercise, control gives players credit for having developed, through prior counterintelligence (*ci*) certain counterintelligence assets. Examples are informant nets and penetration of certain organizations. Controllers at all levels accept statements of their players on the extent and capability of player *ci* operations. A player may state that his planned reaction to a certain clue received is to ask his informant who is in a position to determine a reply. In these cases, the controller does not question the informant's capability and gives the player the information.
- (11) Following are some additional methods for stimulating counterintelligence play:
 - (a) Injecting a message from a double agent. This is a convenient method for control to increase rapidly the amount of counterintelligence information made available to the player.
 - (b) During the pre-exercise intelligence play, injecting information from a mythical informant directing suspicion to one of the agents whose biography is available. This type of injection is designed to require surveillance of an individual or installation. The requirement for surveillance is an excellent means of providing a basis for players to coordinate with other military and civilian intelligence and police agencies since control can have the agent move extensively on foot or by vehicle, rail, or air throughout the area and into other sectors. When moving an agent into another sector, the losing controller notifies the gaining controller well in advance. Surveillance, like most other counterintelligence play, is paper play only.
- (12) In the injection of information or intelligence, controller staffs avoid items which may be distasteful or offensive to military or civilian agencies of the U.S. or friendly foreign governments. Any incident or succession of incidents which appear to imply a *widespread* Aggressor penetration

SAMPLE AGENT BIOGRAPHY

OPERATION: Pink

CASE: PLATRONE, Cesareo

HOSTILE SERVICE: Aggressor Military Service

TARGET: Demolitions Expert

DESCRIPTION: 48 years old; height 5 feet 7 inches; weight 130 pounds; frail in appearance; wears eyeglasses, bald; eyes brown.

SUMMARY

Cesareo PLATRONE was born and raised in (country). He served in the (nationality) Army during World War II and became a prisoner of Aggressor in January 1945. He was a sergeant at the time. PLATRONE met Ramiro ENJUTO while they were prisoners. The two men were repatriated in 1954. PLATRONE was recruited by ENJUTO in 1957 and given training in use of demolitions to capitalize on PLATRONE'S wartime military experience. Although ENJUTO was responsible for recruiting PLATRONE, the latter was used as an independent agent with specialized missions in sabotage. His instructions came from one source only: Antonio VELLA. PLATRONE has no living relatives and lives alone in a rented room in (district) (vicinity of (location)).

Figure 9. Sample agent biography.

of a civilian organization (military or civilian) is illogical and unacceptable.

- (13) In preparing for counterintelligence activities, a complete file of enemy agents, their biographies, and operations is compiled for the exercise area. If a comprehensive list cannot be furnished by the highest control echelon, then an alternative method may be used as follows. Basic personality data and information sheets are prepared at the highest control planning level. After examining the basic personality data and information sheets, intelligence control at all levels prepare similar personal briefs and agent networks within their areas of interest. Each area of control should have one or more independent agent networks and a number of individual agents who can be assigned special missions. A system is devised to disseminate agent biographies to major control staffs. A sample agent biography is shown in figure 9. The format used for the basic source data and information sheet is shown in FM 30-17 (C), appendix IV (C), page 318.

j. Technical Intelligence Control.

- (1) The purpose of technical intelligence control is—
 - (a) To train the technical services in the timely handling and evacuation procedures of technical intelligence items.
 - (b) To train technical intelligence detachments in the processing and evaluation of intelligence derived from enemy material.

- (2) Controllers at each echelon introduce technical intelligence items to players with sufficient frequency and extent to generate realistic participation by all technical intelligence detachments and technical services.
- (3) Subordinate controllers receive from higher control echelons an allocation of technical intelligence items prior to the beginning of an exercise.
- (4) Technical intelligence items are injected into player channels at the lowest echelon possible and as early in the exercise as practicable.
- (5) Player technical intelligence detachments from each technical service are employed to—
 - (a) Collect and report information obtained from study of technical intelligence items inserted into exercise play by controllers.
 - (b) Select and report items for intelligence exploitation.
 - (c) Assist in the production of information and intelligence peculiar to the needs of the technical service concerned and the supported unit.
- (6) Technical intelligence coordinators and technical intelligence personnel participate in CPX's as players only. They assist in supervising the evaluation and dissemination of intelligence from simulated captured enemy material in accordance with SOP's.
- (7) The intelligence controller provides adequate technical intelligence play. Technical intelligence control may be an

additional duty for a controller in a related field. Field army, corps, and division technical intelligence coordinators should produce sufficient exercise technical intelligence situations in advance of the exercise for use by intelligence controllers to adequately exercise technical intelligence players in each technical service.

109. Combat Service Support Control

a. Combat service support play responds to both the tactical situation and planned combat

service support events. Most combat service support events take place in rear areas and may involve civilian agencies. As a result, it is difficult to insert free play incidents in a realistic manner. The problem is further complicated if both civilian and military channels are involved. These difficulties may be overcome by careful planning and preparation of combat service support events. Normally, all events take place according to the previously determined schedule. Flexibility is achieved by on-call events with an indication of the control echelon authorized to inject each event. The control echelon

No.	Date/time	Installation and GZ	Incident and remarks	Injected by	Primary control agency	Reaction expected
A-1	D-day H-hour	347691	200 KT—Airburst Highway 403 vic GZ blocked by debris. Highway 3 blocked from 325682 to 352702. Building rubble, impassable at 349690. Tree blowdown 2,300 meters radius from GZ.	Army	Army	1. Take steps to determine detailed assessment of damage. 2. Reroute traffic. 3. Report to higher headquarters. 4. Slow down operations because of rubble and tree blowdown. 5. Request assistance.
		SP 999	90% MOGAS des, 50% AVGAS 115/145 des. Military casualties—105 KIA.	QM gp	Army	1. Report to higher headquarters. 2. Take steps to determine detailed assessment of damage. 3. Evacuate remaining supplies. 4. Relocate supply installations. 5. Request resupply to replenish stocks.
		Sig prestock point.	150 reels spiral four des. 1,000 reels WD-1 on RL-159 Severe damage to storage area.	Sig bn	Corps	6. Reconstitute supply support. 1. Report damage. 2. Reconstitute supply support.
L-9	D-day 2000Z	Attack by 30 guerrillas	SP 967 destroyed. POL to support corps critical. Military casualties—15 KIA, 10 WIA.	POL sup co	Army	1. Request required POL support. 2. Request that G4 take action to procure immediate POL supplies from civil sources. 3. Reinforce security measures.
L-30	ON CALL. Can be inserted if required during period D+1 to D+3	Smithville Supply Complex	50 KT Airburst a. Rail station completely destroyed 1 battalion day equivalent necessary to reestablish single track. b. US military personnel 50 KIA and 100 WIA. c. POL depot (059073) completely destroyed. d. Rod net, no major damage. e. City of 300 houses destroyed: water, electricity, and utilities severely damaged. Civilian casualties. 700 dead and 400 required hospitalization. f. 1000 persons fleeing west on Highway 4 using carts and trucks.	Army	Army	1. Damaged area to be blocked off by civilian authority. 2. Field army take steps to reconstitute supply point and destroyed facilities.

Figure 10. Sample combat service support events list.

injecting the event informs other control echelons of the injection and the time and place involved. A sample format and example of combat service support events are shown in figure 10. Each echelon of control receives appropriate extracts from the list of combat service support events. Controllers release information at the appropriate time and place, taking into account foreseeable communication delays and player actions.

b. Civil affairs control.

- (1) The realism of civil affairs play in CPX's depends on the completeness of the civil affairs plan, adequacy of civil affairs control, and the completeness of civil affairs staff sections and civil affairs unit headquarters participating in the exercise.
- (a) If sufficient civil affairs personnel and units are not available to provide separate player and controller elements for the exercise, a combined civil affairs player-controller staff section should participate in the exercise.
- (b) The comprehensiveness and realism of civil affairs activities in any exercise are also governed by the extent of participation of civil agencies in the exercise area. While this participation is desirable, controllers can represent appropriate civil agencies if participation is not feasible.
- (c) Some areas for possible play are—
 1. Requirements for plans, orders, annexes, directives, estimates, studies, and reports.
 2. Recognition and reporting of information and intelligence.
 3. Maintenance of files and records.
 4. Integration of civil defense into rear area security and area damage control plans.
 5. Formal and informal conferences and briefings.
 6. Revision of status of forces and civil affairs agreements.
 7. Planning for control of refugees and displaced persons.
 8. Establishment and implementation of claims service policy.
 9. Availability of labor.
 10. Conduct and control of civil affairs activities and operations when the civilian population is subjected to

chemical, biological, and radiological attacks.

11. Planning for military assistance in support of civic action programs.
 12. Civil affairs support in the conduct of police operations against the underground elements of an irregular force.
 13. Administration of civil reconstruction and rehabilitation programs.
 14. Planning of programs for the removal of the causes of insurgency as part of an overall counterinsurgency program.
 15. Employment of Psychological Warfare Companies (Consolidation) or other psychological warfare elements in support of civil affairs operations.
 16. Organization of civil affairs mobile training teams on a mission basis.
- (2) Additionally, civil affairs problems and tasks may be injected that involve monitoring of procurement of local resources; civilian charitable, religious, welfare, educational, and medical facilities; monitoring of procurement of local labor; supervision of distribution of civil relief supplies; planning for restoration and supervision of use of public utilities, communication, and transportation facilities; and many other functions throughout the spectrum of government. For detailed discussion of civil affairs functions and responsibilities, see FM 41-10.

110. Air/Ground Operations Control

a. General.

- (1) Air/ground operations control is centralized primarily at the highest level playing the exercise.
- (2) Army controllers and Air Force controllers normally are in the control organization. The control system is superimposed on the player organization for air/ground operations. The organization and functioning of air/ground control is a joint matter unless Air Force headquarters and units are not playing in the exercise.
- (3) From the Army standpoint, exercise control operates on a joint basis within the air/ground operation system. Many Army personnel in the air/ground system must operate in dual player-controller roles. This includes personnel in the highest con-

trol staff and liaison personnel at airbases and with air units.

- (4) Controllers are prepared to integrate other portions of the air battle into Army play, particularly portions which affect conduct of the ground battle.

b. Function and activity of the air/ground operation system are a player responsibility. Functions and activities include—

- (1) Allocation of the air effort to ground support.
- (2) Requesting strike and reconnaissance missions, both immediate and preplanned.
- (3) Reporting results of strikes.
- (4) Obtaining, receiving, and processing information of intelligence value from air strikes, reconnaissance in support of ground operations, and other air operations.

c. In superimposing a control system on the existing air/ground operation system, the following are provided for—

- (1) Monitoring the functioning of the air/ground operation system without interfering with it.
- (2) "Flying" the approved missions which do not abort.
- (3) Determining the results achieved from each mission.
- (4) Arranging for the results to be fed back to players in the most logical and timely manner and from the most logical source. Players receive neither a time penalty nor a time advantage as a result of the functioning of the control system.

d. Information and intelligence is injected into player channels by several means. Typical means are the in-flight spot report, the imagery interpretation report, and the debriefing report.

- (1) An in-flight report is a concise one-way radio transmission from the pilot reporting significant visual sightings. It contains a brief description of what the pilot sees, the location, and time of sighting. Control introduces written in-flight spot reports directly into player intelligence channels at the appropriate echelon or wherever players have the capability to monitor the nets.
- (2) An imagery interpretation report is either immediate or routine and is injected where it would normally occur.
- (3) A debriefing report is made after the pilot has returned to base. It is essentially

what he saw during the flight. A debriefing report is put into player channels at the reconnaissance airfield and is processed and disseminated through normal channels.

e. Whether the mission is "flown" by Army or Air Force controllers, the "flyer" establishes a flight profile that specifies where the flight traveled and the altitudes flown. The profile is applied to a current situation map to obtain the latest and most complete Aggressor situation. The "flyer" then determines the results of the mission by applying the factors of aircraft and pilot capability, weather, Aggressor opposition, and target vulnerability.

f. On fixed targets, such as airfields, rail centers, and bridges, reconnaissance results, whether obtained by reconnaissance aircraft or fighter-bombers, can show a profitable target for either conventional or nuclear strike. On transitory or fleeting targets, such as troop concentrations or movements, reconnaissance results obtained by other than true reconnaissance aircraft are general and must be confirmed by additional reconnaissance before the target can be considered profitable. Exceptions are those instances where control reports a clearly defined target in the initial reconnaissance results. The timeliness of intelligence injection, especially for fleeting targets, is important.

g. Controllers cause players to abide by the above criteria by significantly lowering strike results when target data are not properly confirmed. To cover the possibility of deficiencies arising in reconnaissance planning, intelligence material on likely targets is prepared in varying degrees of accuracy and completeness to cause players to initiate confirming reconnaissance before striking, especially in the case of planned nuclear strikes.

h. Much intelligence results from air operations, particularly from air reconnaissance missions flown at great distances beyond the forward edge of the battle area. But control should not favor this means to the neglect of Army aviation, long-range reconnaissance patrols, friendly guerrillas, electronic reconnaissance, and the US Army Security Agency. For exercise purposes, control varies the amount of detail and accuracy furnished in the results of reconnaissance and other types of sorties. Controllers also assess losses on Aggressor forces that are inflicted as a result of the overall air effort.

i. A tabular publication is prepared for controllers to provide a simplified assessment of results from close air support, airstrikes, air attacks, and air reconnaissance. Nuclear strike results may also be shown, particularly if players plan to deliver a

significant number of weapons by aircraft. Nuclear missile results may be included in the same tables for convenience. Strike results include terms to define and specify what is meant by hit, miss, or doubtful. Reconnaissance results have identifying terms to state whether the target is operational or nonoperational, whether the enemy is restoring the target to operational status or not, and if reconnaissance is ineffective (i.e., results are indeterminate). Rules are developed to simplify and expedite the damage estimation which controllers make. Data are based on either classified or unclassified special weapon effects and include operational failures on the part of player weapon systems, both ground and air. The rules are developed only as a time saving device. The following tables are suggested:

- (1) Nonnuclear damage to airfield. The table is based on standard loads, number of aircraft attacking, and number of hours the base will be nonoperational.
- (2) Nonnuclear damage to aircraft. The table is based on standard loads, number of attacking fighter-bomber aircraft, and the number of aircraft attacked on the ground.
- (3) Nonnuclear damage to electronic installations.
- (4) Damage to POL facilities.
- (5) Nonnuclear damage to ground force targets. The table shows categories of targets such as infantry companies, artillery batteries, a tank or motor park, command posts, and ammunition supply points or dumps; condition of the target with degree of protection; and the percentages of the targets destroyed or damaged by the attack. Rules can be provided for modification of the percentage figures for multiple aircraft attacks if, for example, the target has air defense protection.
- (6) Nuclear damage to Aggressor personnel, equipment, and installations.

111. Control of Guerrilla Operations

a. Rear area security and area damage control procedures are tested by the insertion of guerrilla warfare activities. The situation is developed realistically to permit the logical occurrence of these activities.

b. Controllers at all levels coordinate and inject guerrilla warfare problem play. Activities that cause damage to supply installations or disrupt highway and rail traffic are coordinated with the appropriate controllers.

c. Controllers at each echelon select targets for guerrilla activities within their zones of operation. Results of attacks are determined by controllers after consideration of player plans for local protection and other countermeasures. In some instances, control provides warnings of impending guerrilla attacks. Results of these attacks depend on the friendly actions taken on receipt of the intelligence warnings. Controllers acknowledge the success of players to circumvent or prevent successful guerrilla actions. In some cases, erroneous intelligence warnings are generated and given to players.

d. Assumptions are made in the intelligence plan as to the scale and type of guerrilla forces and activities. These assumptions are appropriate to the area of operations and the objectives of the exercise. For example, it may be assumed that Aggressor has established small, organized cells of guerrilla fighters throughout the area. These forces are equipped with small arms, hand grenades, automatic weapons, demolitions, and radios. Aggressor airborne supply and personnel drops may be planned and executed to assist his guerrilla forces, but drops should be limited to hours of darkness with single planes at any one place or at any one time.

e. Guerrillas conduct small-scale operations of short duration and over broad areas by well-dispersed forces making maximum use of surprise.

f. Guerrilla events are integrated into the schedule of events in a manner similar to other events.

Section VI. FIELD EXERCISES AND FIELD MANEUVERS

112. General

a. The basic control and support organization does not change in the conduct of field exercises and field maneuvers. Unit umpires are added at battalion and below to control physical contact, assess damage and losses, and enhance battlefield realism. Additional umpires are added for functional specialties such as fire marking and to assist unit umpires in the performance of their duties. The brigade (or equivalent level) controller commands subordinate unit umpires. The missions and duties of umpires are discussed in chapter 6.

b. Most aspects of control discussed previously (pars. 95-111) apply to field exercises and field maneuvers. The discussion in subsequent paragraphs is limited to aspects of control unique to field exercises and field maneuvers.

113. Control Functions and Activities

The concept of control and role of the controller during a field exercise or field maneuver are best explained by comparison with the control functions and role of the controller in the conduct of a CPX.

a. In the field exercise and field maneuver, the battlefield picture is continually portrayed to the troops at the lowest level by the umpire. The presence of all troops, the normal reports sent through command channels, and the information passed laterally supplant most of the environment of the battlefield that control furnishes during a CPX. During a field exercise, controllers at brigade and higher levels furnish some information from adjacent units not playing and from intelligence sources not playing, but the amount of this information is small compared to that furnished by controllers during a CPX.

b. During the field exercise and field maneuver, controllers and umpires monitor the progress of player echelons, attend all player briefings and conferences, receive copies of player orders, messages, and reports, and report the progress of the exercise through the control chain of command.

c. The controller or umpire with a playing echelon only observes, reports, and stimulates. He does not direct players unless a safety hazard arises.

114. Control of a Battalion Army Training Test

a. Figure 11 shows an example of an umpire/control organization suitable for a battalion undergoing an Army training test.

b. When a brigade headquarters conducts the exercise, it functions as the overall control headquarters and does the following:

- (1) Represents brigade headquarters for playing battalions, commands all playing battalions and elements and commands the Aggressor force if used.
- (2) Provides for support of all units in the field.
- (3) Represents adjacent battalions or units for purposes of—
 - (a) Coordinating operations and intelligence.
 - (b) Maintaining liaison and flank contact.
- (4) Represents friendly units for playing elements for relief, passage of lines, and withdrawals through rearward positions.
- (5) Commands the umpires with the tested battalions. The Aggressor commanders function as controllers if the Aggressor unit is not being tested.
- (6) Provides additional area and specialized umpires and controllers.

c. Umpire/control communication facilities are comparable to those employed by players. At battalion and below, umpires rely on mobile FM radios with sufficient range to contact their own unit umpires and the umpires of the opposing force. Above battalion, additional means such as AM radio, wire, and radio teletype are employed. Controllers and umpires seldom require more than one net per unit per communication means. Most nets must operate 24 hours per day. Use of radio sets equipped with two receivers enables the umpire to monitor player radio transmissions and operate in umpire radio nets.

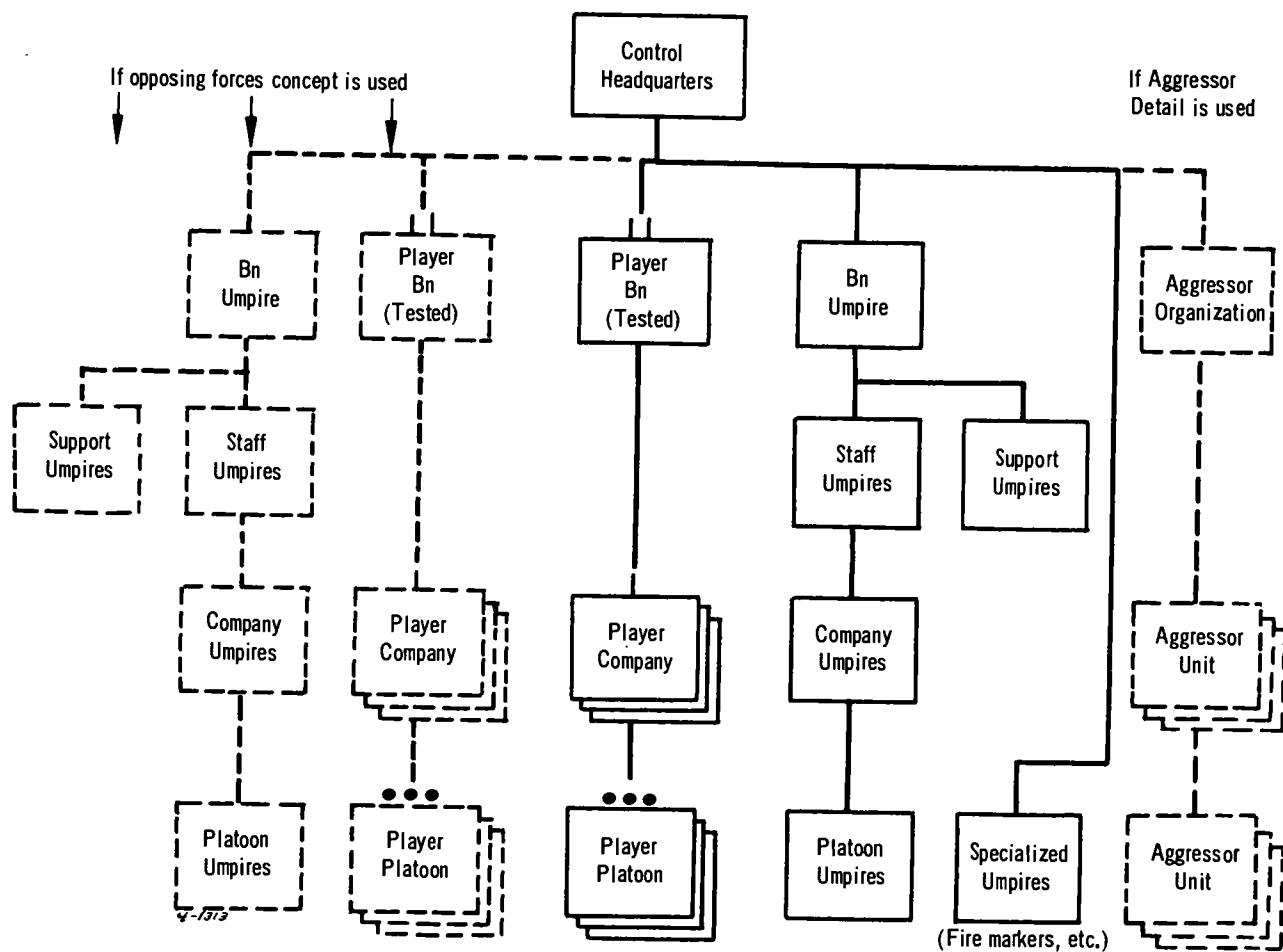
115. Division Field Exercises

a. Figure 12 shows a typical umpire/control organization for the conduct of a division field exercise.

b. The control headquarters (division) represents higher and adjacent nonplaying headquarters and units.

c. In order to provide realistic play for support command elements, the division arranges for real or simulated field army supply and service installations and facilities to support the exercise.

d. Umpire/control communication is provided as in paragraph 114c. If no additional communication resources are available to the division, it allocates resources between players and the umpire/control system.



NOTE: Army Training Tests may be conducted as stated below. Brigade control commands all elements in the exercise.

1. If the opposing forces concept is used, two battalions maneuver against each other. Duplicate umpire organizations are required. Some specialized umpires may serve both sides.
2. If an Aggressor force is used, Aggressor commanders may act as umpires to control actions of Aggressor forces.

Figure 11. Umpire/control organization, battalion army training test (field exercise).

116. Control of Field Army and Joint Field Maneuvers

a. Figure 13 shows a typical umpire/control organization for the conduct of a joint field maneuver. The Army portion of the maneuver is conducted by a field army headquarters with corps and army troops playing.

b. The control and umpire organization, concept of control, support to be provided, communication, and representations of nonplaying units are comparable to those tactical exercises previously discussed.

c. Figures 27, 28, and 29 show a control and umpire organization for a division participating in a field exercise or field maneuver. Comparable

control and umpire organizations are developed for all corps and army units participating in the maneuver.

117. Common Faults

An exercise that is dominated by excessive control or inadequate control at lower echelons is frustrating to players. Following are some causes of this situation:

- a. Exercise objectives and rules are not in consonance with one another or actual maneuver conditions which players face.
- b. Insufficient orientation of players.
- c. Insufficient experience and judgment of umpires and controllers.

for player actions.

f. Insufficient training and orientation of umpires and controllers in the exercise area.

g. Attempts to remedy deficiencies in player operations through control and umpire channels.



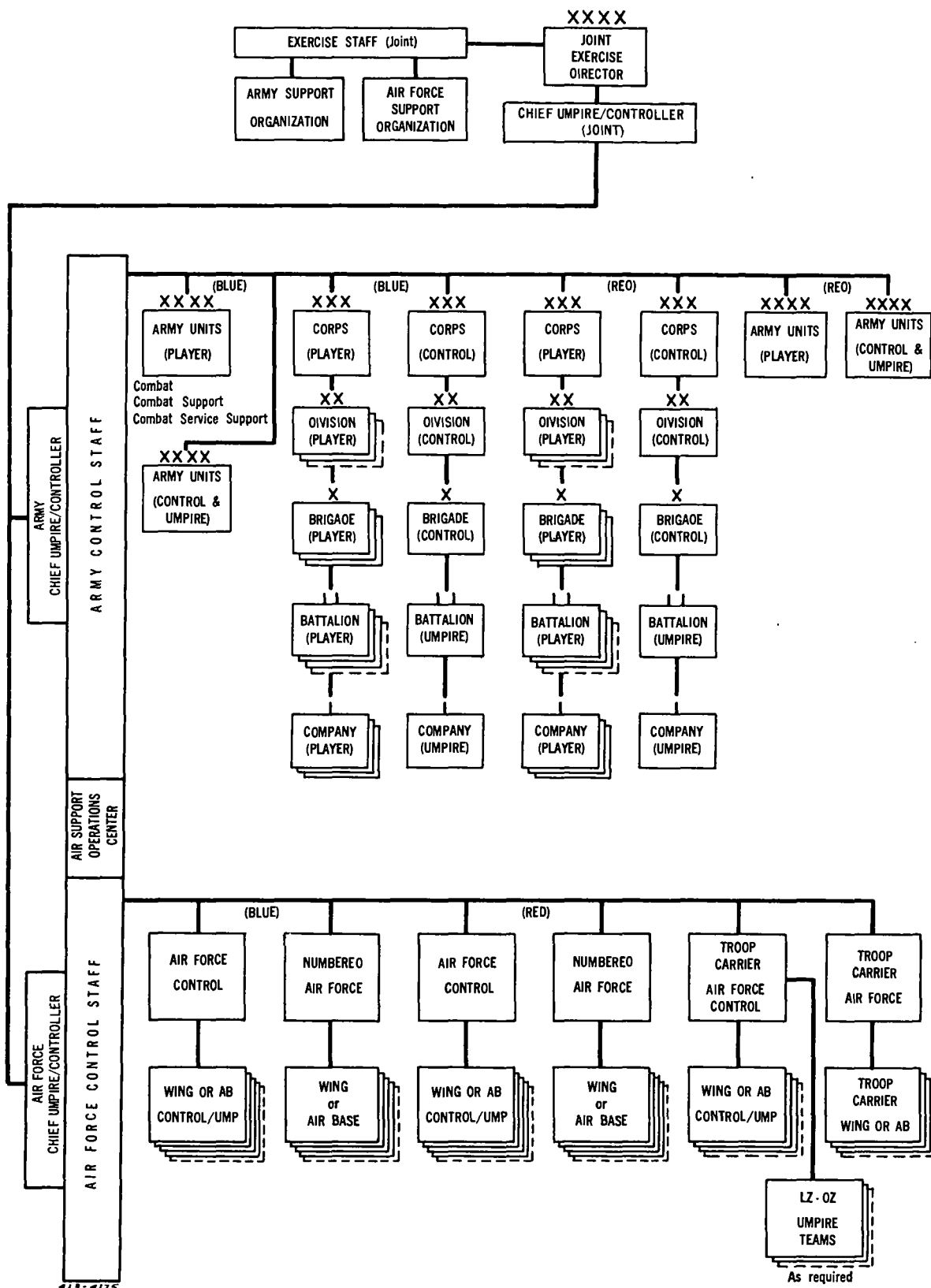


Figure 13. Umpire/control organization, field maneuver (joint).

CHAPTER 6

UMPIRE ORGANIZATION AND CONTROL

Section I. UMPIRE ORGANIZATION

118. General

a. The basic types of tactical exercises for which umpires may be required are described in chapter 2.

b. Two umpire systems are in general use—The area umpire system and the unit umpire system. The two systems may be combined or modified to fit the needs of a particular exercise. In the unit umpire system, umpires are assigned to units and remain with those units throughout the exercise. In the area umpire system, the principal arbiters of tactical action are area umpires who are associated with a particular zone or sector of the maneuver area or with a particular engagement between opposing forces rather than with a particular unit.

c. Umpires may perform three functions dependent on the type of exercise being conducted and the echelon to which assigned. These functions are as arbiters, controllers, and evaluators. At the platoon, company, and battalion levels, umpires are essentially arbiters. They render prompt and logical rulings in any combat, combat support, or combat service support situation which arises during the exercise. In their roles as controllers and evaluators, they assist in keeping the exercise within the parameters of the scenario and in evaluating the unit, section, or activity to which attached.

119. Unit Umpire System

a. The chain of command of the umpire organization parallels that of the units participating in the exercise. In addition to the unit umpires, fire marking teams and umpire liaison teams are included in the umpire/control organization to mark fires, augment the unit umpires, and umpire special facets of the exercise or situations which may occur.

b. Typical umpire organizations for a maneuver of division size are shown in appendix X.

c. The senior umpire assigned to a unit is responsible for all umpiring within that unit. When contact is established between opposing units, the

platoon and company umpires assess the combat power developed on each side, assess casualties, make rulings concerning movement which realistically reflect the combat power ratio, and report their rulings and the situation to the battalion umpire. The battalion umpire coordinates the actions of the company umpires, makes rulings concerning the movement and actions of the battalion which realistically reflect the combat power ratio, injects information concerning flank units or as otherwise included in the scenario, and reports his rulings and the situation to the brigade or regiment. At this and higher echelons the chief umpire/controller keeps the next higher echelon informed of the situation in his unit. He injects information in the scenario or as required to force the play of the exercise depicted in the scenario. Disagreements between the umpires of opposite sides are resolved at the lowest echelon practicable in the umpire/control structure.

120. Area Umpire System

a. In the area umpire system a combination of unit (resident) and area umpires is used. In this system, one experienced officer evaluates all factors bearing directly on the outcome of a specific engagement and delivers on-the-scene judgment as to the course of the exercise. The area umpires are assisted in this function by resident umpires who are associated with the same player units for the duration of the exercise, and whose principal duty is to furnish information concerning their units to the chief umpire and to the area umpires.

b. Area umpires are employed as directed by the chief umpire/controller. They may remain permanently in a given sector, or they may be moved from area to area. When not engaged in umpiring a particular action, they may be held in readiness in umpire pools.

c. The operations and training sections in the control headquarters are charged with responsibility for the briefing and timely dispatch of area teams to the scene of impending tactical engagement. Assistant chief umpires are provided to umpire large or otherwise critical actions.

d. Resident umpires may be assigned to each player headquarters for units of company and larger size. They remain with the same player unit for the duration of the exercise. Their functions are to monitor the orders and actions of their units, report these orders and actions to the chief umpire, assist area umpires in the control of tactical engagements, and evaluate the performance of the unit. The types of resident umpires are—

- (1) *Senior resident umpire/controller (SRUC)*. The resident umpire/controller with the senior player headquarters on each side. The SRUC controls the other resident umpires with his side.
- (2) *Resident umpire/controller (RUC)*. An umpire with a subordinate combat unit.
- (3) *Senior combat service support umpire/controller (SCSSUC)*. A resident umpire/controller at the senior headquarters on each side. He is concerned principally with combat service support including planning and execution of rear area security and area damage control. He monitors combat service support activities of the staff and assesses the feasibility of tactical plans in the light of combat service support plans and actions. He is furnished technical service assistant umpire/controllers as necessary.
- (4) *Combat service support umpire/controller (CSSUC)*. A resident umpire/controller at the headquarters of a subordinate combat unit. His functions parallel those of the SCSSUC.
- (5) *Combat service support unit umpire/controller (CSSUUC)*. A resident umpire/controller with a combat service support unit. He monitors and evaluates all aspects of the operations of his unit.

e. An area umpire team consists of an officer and one or more enlisted assistants. It umpires the tactical action in a specified area for a specified period of time or umpires a particular engagement. The composition of teams varies according to the size and scope of the actions they are expected to umpire. There are two types of teams:

- (1) *Company action team*. This team consists of a major or captain and two noncommissioned officer assistants. Additional enlisted personnel may be assigned as drivers and radio operators. The team is designed to umpire the action between forces of company size. It may operate independently or it may be placed under temporary control of a group action team.
- (2) *Group action team*. This team consists of a colonel or lieutenant colonel and one noncommissioned assistant. It umpires and controls the action between forces of brigade and regimental size. For any specific engagement, it is normally augmented by two or more company action teams.

f. A typical umpire/control organization for a free maneuver of division size is shown in figure 30. This organization is expanded in larger exercises to preserve an effective span of control at the chief umpire/control level. Table LXIX shows a suggested composition for umpire teams. The maneuver area is divided into sectors. This facilitates the assignment of tasks to area umpires and fire marking teams, promotes the exchange of information within the umpire/control organization, and assists umpires in their reconnaissance. Sectors need not be uniform in size. In those areas where engagement between opposing forces is anticipated, sectors may be smaller than in remote parts of the maneuver area. Sector boundaries should be easily identifiable. Dominant terrain features should be completely within a sector.

g. Operation of the system is as follows:

- (1) *Umpire/control plans and dispositions*.
 - (a) The chief umpire/controller keeps himself informed of the orders and actions of the player units. He accomplishes this through personal visits and conferences with both sides, the use of assistant chief umpire/controllers in a liaison capacity, and timely reporting by resident umpires. Based on his review of player plans, he attempts to foresee the pattern of development of tactical engagement between the opposing forces.
 - (b) Area umpire teams in appropriate combinations are deployed in preparation for the anticipated initial engagements. Fire marking teams are deployed according to player fire plans and anticipated action. Teams not deployed are held in

umpire pool locations for dispatch as required. Area umpire teams arrive at the scene of impending action at least 15 minutes before contact is established between opposing forces.

- (c) The senior area umpire present in an active sector is responsible for all umpiring in that sector. All umpires operating in the sector, regardless of type, are subject to his instructions.
- (2) *Actions of area umpire teams.*
 - (a) Before being dispatched, teams are informed of the disposition and plans of the player units.
 - (b) The area umpires familiarize themselves with the terrain and player dispositions on arrival in the area of contact. The senior area umpire establishes contact with resident umpires of the player units, determines the status of their units as it may affect the tactical action, and informs the resident umpires of the assistance he expects from them during the action.
 - (c) When contact is established between opposing player units, the area umpires, under the direction and supervision of the senior area umpire, assess the combat power developed on each side. They also make rulings concerning casualties and movement of units which reflect the combat power ratio. A major advantage of the area umpire system is that it allows engagements to be arbitrated by an experienced officer of mature judgment who has no special identification with either player side. The umpire/control criteria in chapter 7 are used as guides, and the area umpire relies on his judgment and experience to allow the tactical situation to develop realistically.
 - (d) Prolonged actions and those which extend over great distances may be umpired in either of two ways.
 - 1. The area umpire teams assigned to umpire the action in a particular sector may have their activities limited to that sector. In this case, the action passes to the jurisdiction of other area umpires as the action moves into another sector. When the action has passed completely from the sector, the area umpires in that sector are dis-

patched on another assignment, returned to the umpire pool, or directed to remain in the sector in anticipation of further action.

- 2. As an alternative, the chief umpire/controller may direct that certain area umpire teams follow the action from from sector to sector until some player event, such as the completion of a tactical phase, breaks the continuity of the action.

h. Umpire communication is as follows:

- (1) Umpire communication is principally by radio and radio relay. Maneuver area communication facilities are integrated into or supplement the normal area communication system. A separate area system is not provided solely for umpire/controller use. Area umpire teams and resident umpires operate radios in appropriate radio nets. Radio-wire integration facilities at area signal centers permit the umpire/controller radios to enter the area communication system. Umpire/controller personnel are given training in radio-wire integration service.
- (2) Wire is used to augment radio and radio relay circuits. An umpire wire circuit having a number of unattended drop wires spaced at appropriate intervals may emanate from each area signal center, traversing the area served by that center.
- (3) Typical radio nets are shown in figure 31.

121. Fire Marking Teams

Fire marking teams are found in both the unit umpire and area umpire systems. These teams portray the effects of surface-to-surface and air-to-surface chemical, nuclear, and nonnuclear fires. The types of fire marking teams are—

a. Fire Marker, Ground (FM-G). This team portrays the effects of nuclear, nonnuclear, and chemical fires in its area of responsibility. It receives information concerning the delivery of these fires from umpire elements associated with the delivering agencies, either directly or through umpire headquarters.

b. Fire Marker, Air (FM-A). This team performs the same function as the FM-G team. Its distinguishing features are that it is airborne in Army aircraft and is normally not limited to a specific sector of the maneuver area. It marks fires while airborne or while on the ground. It is especially

useful for marking deep fires and fires delivered into areas not readily accessible to FM-G teams.

c. Fire Marker, Relay (FM-R). This team is located at an artillery fire direction center. It monitors all fire missions, assesses the effectiveness

of the fire delivery operation, and transmits data to the appropriate FM-G or FM-A teams on type, time, volume, impact point, and origin of all fires delivered by the unit. This team also transmits information concerning delivery of nuclear fires to the chief umpire/controller.

Section II. MISSION, FUNCTIONS, AND DUTIES OF UMPIRES

122. Mission and Functions of the Umpire

The primary mission and functions of umpires in both the unit umpire and area umpire systems are—

a. To determine and portray the effects of movement, disposition, firepower, and logistics on the development of a tactical situation.

b. To cause the exercise to develop in such a manner that the individual soldier and the unit commander can take action and make decisions.

c. To provide the exercise director a means through which he can influence the operations of the opposing forces.

d. To report, as directed, all current and planned activities of the unit to which assigned.

e. When designated as an evaluator of the exercise, to inject data, material, or factors for test and evaluation as directed by the test and evaluation group.

f. To evaluate the operation and report on the proficiency of the unit or activity which he umpires. In small tactical exercises, an individual umpire generally is both the rater or evaluator and the controller. However, umpire/controllers, particularly in major exercises, may operate with one group functioning primarily as controllers and another as evaluators.

123. Actions of Umpires

a. The actions of umpires are similar in both the unit umpire and area umpire systems except as modified in paragraph 120.

b. In carrying out their missions, umpires—

(1) Create the atmosphere of a battlefield by depicting the combat, combat support, and combat service support situations and events and the activities of civilians within the combat area.

(2) Determine and announce the results of contact after considering relative effective firepower, troop dispositions, combat service support, maneuver, and military aspects of the terrain such as observation, cover, concealment, and fields of fire.

(3) Assess military and civilian casualties and damage to materiel.

(4) Bring to the attention of the commander the effects on the operation created by refugees, displaced persons, and guerrilla activities.

(5) Designate captured personnel to be retained as prisoners of war.

(6) Assist commanders in complying with safety regulations and report violations of safety rules.

(7) Supervise the tagging of simulated casualties, prisoners of war, and damaged or destroyed equipment.

(8) Report on deficiencies as directed.

(9) Cause action to be halted if a combat or combat service support situation threatens to get out of control.

(10) Report plans and dispositions of the unit to the next higher umpire.

(11) Command and supervise activities of subordinate umpires.

(12) Prevent physical contact between troops of the opposing forces. Umpires and controllers exercise extreme caution in controlling opposing forces to prevent accidents and undesirable incidents, especially in the security areas of special weapon units.

(13) Prevent damage to materiel.

(14) Instruct personnel of the unit to which assigned in umpire methods.

(15) Prepare for a critique and submit a written or oral report of the performance of the unit to which assigned.

c. The umpires at the platoon and company level must "PAINT THE PICTURE". Since battle sounds may not be present in training exercises, announcements are made by umpires to supplement the use of blank ammunition and simulated shell bursts. These announcements also provide the basis for reports to be made by individuals and small units on their own and enemy actions. These

reports to higher echelons provide the basis of actions taken at these echelons to maneuver their forces.

(1) Examples of announcements at the platoon and company level are—

- (a) "Bridge to right front—400 meters—four shells exploded close together—four more shell explosions—another four."
- (b) "A shell just exploded 300 meters in front of you." Two minutes later—"Shell coming; impact 100 meters in front of you."
- (c) "Fire from a machinegun in the vicinity of that large house (pointing) is searching this area."
- (d) "Machinegun fire is sweeping directly over you; that rifleman (designating) disabled for 15 minutes by ricochet hit. First aid is required."
- (e) "Bursts from a light machinegun striking in your immediate vicinity (indicate designated place); fire apparently coming from the direction of that cornfield. Machinegun fire has ceased."
- (f) "A shell fragment has smashed the sight on your weapon." (After an artillery concentration).
- (g) (To a squad leader) "You have been hit; you are wounded in the left leg and it appears that a vein has been cut."
- (h) "Four shells just exploded upwind of you"—15 seconds later to any unmasked personnel—"you have a tightness in the chest. Your vision is getting dim and you feel dizzy." (Symptoms of nerve agent effects.)
- (i) "Four shells just exploded 50 meters upwind of you—odor in the air of garlic (or horseradish)"—10 seconds later—"Four more shells have just exploded upwind."
- (j) "A nuclear weapon has just exploded 1,500 meters to your right. You are seriously burned and your right leg is broken by flying debris. Your radio is damaged; you cannot use it." (Assess other casualties and damage in the unit or area as appropriate.)
- (k) "You just saw a large, bright flash of light on the horizon, which was followed by the appearance of a black mushroom cloud. The azimuth to the burst was 275 degrees and the cloud width after 10 minutes was 2,000 meters."

(l) "You heard the sound of tank engines about 1 kilometer from you in a south-westerly direction. This was followed by three or four rounds of heavy, flat-trajectory fire."

- (m) "A civilian has just reported to you that he has observed the neighbors in his village gathering food and clothing. One resident of the village has been severely beaten because he failed to contribute."
- (n) "A radio station is known to be operating from deep in a woods which has been used as a camp for local ruffians."

(2) Umpires will not—

- (a) Fail to give an emphatic and clear description of the situation and the effect of hostile fire.
- (b) Call out, "You can't advance beyond this point."
- (c) Reveal the projected course of the exercise.
- (d) Permit a long exchange of fire without announcing a decision.
- (e) Give hostile fire data to the leader only, instead of announcing it so that all can hear.
- (f) Fail to report independent actions of the unit.
- (g) Permit an attack to succeed without proper fire support, or before the enemy withdraws or suffer severe losses.
- (h) Fail to observe the action of troops.
- (i) Divulge knowledge of the terrain or show a map to the troops when they have no maps on hand or when the details of the scenario are depicted on it.
- (j) Permit unit commanders to use umpire radios when theirs are out of action instead of requiring them to solve their own communication problems.
- (k) Favor the unit which they are umpiring.
- (l) Hold up the progress of the exercise to discuss the situation instead of portraying a reasonable picture and maintaining realism.
- (m) Become involved in arguments or be unduly influenced by the unit commander. (The umpire renders impartial decisions.)
- (n) Fail to be present when unit commanders issue orders, send messages, hold briefings, or prepare plans.

- (o) Fail to submit complete and accurate reports at prescribed times.
- (p) Fail to consider fields of fire, concealment, cover, surprise, and dispersion in the employment of artillery and automatic weapons.
- (q) Make tactical decisions that are the responsibilities of the commanders concerned.
- (r) Provide intelligence not being sought by the unit concerned unless it is called for by the scenario.

124. Artillery Umpires

a. Artillery Umpires are responsible for—

- (1) Observing the tactical employment of artillery units.
- (2) Supervising subordinate umpires and fire marking teams.
- (3) Authorizing the marking of fire missions when proper artillery techniques are employed, to include complete procedures from start of check to "missile away" in the case of guided missiles and rockets.
- (4) Assessing casualties and damage against the unit to which assigned.
- (5) Reporting all changes in artillery unit locations and events that influence the exercise play.

b. Among the items observed and checked are—

- (1) Planning and coordination.
- (2) Intelligence.
- (3) Fire direction.
- (4) Logistics.
- (5) Communication.
- (6) Missile and ground support equipment checkout and firing procedure.
- (7) Vulnerability of missile units to suppressive fires.
- (8) Coordination in the use of airspace.
- (9) Ability of air defense and field artillery units to operate under centralized and decentralized control.
- (10) Adequacy of the rear area security plan to provide protection for missile units against the activity of special forces.
- (11) Operation of the fire support coordination element at the tactical operation center.
- (12) Adequacy of the artillery fire plan and other fire plan appendixes to the fire support plan.
- (13) Dissemination of early warning.

125. Air Defense Umpires

a. The air defense command post is umpired to determine the effectiveness of fire distribution, the availability of identification information, and the degree of control of friendly aircraft. The chief Army air defense umpire/controller operates at the highest Army air defense command post, assisted as necessary to umpire and control the command post. All Army air defense umpire/controllers are supervised by the chief Army air defense umpire/controller. Air defense group command post umpire/controllers umpire the command post and are assigned as necessary. Command post umpire/controllers supervise subordinate umpires and observe the overall tactical, technical, and administrative performance of the air defense elements. Air defense umpire/controller representation is provided at the air defense element (ADE) of the tactical operation center (TOC). The air defense annex to the fire support plan is examined for adequacy.

b. Air defense artillery battalion umpires supervise battery umpires and observe the overall tactical, technical, and administrative performance of the battalion.

c. Umpires with air defense artillery batteries (including headquarters batteries of brigades and groups) perform the following duties—

- (1) Observe and report on performance of the air defense unit.
- (2) Assess and report the engagement of aircraft by air defense artillery units. Group and brigade umpire/controllers determine the general effectiveness of the defense and assess the number of aircraft allowed to penetrate the defense.
- (3) Observe and report on security; reconnaissance, selection, and occupation of positions; preparation for action; and tactical and logistical effectiveness. The umpires' observations should result in an adjectival rating except where direct action against the unit occurs or failure of a unit to become operational at the proper time has impact on the defense.
- (4) If system checks and adjustments are not proper, make appropriate adjustments in scores. Adjustment of scores are not less than 50 percent reduction of effectiveness if procedures are incorrect. Fire unit umpires determine in each engagement whether target detection, acquisition, iden-

tification, tracking, and engagement were such that kill was accomplished.

- (5) Check for understanding of and compliance with brigade or group standing operating procedures. At brigade, check compliance with operating procedures and coordinating instructions of higher headquarters.
- (6) Check for understanding and observance of conditions of readiness, rules of engagement, fire restrictions, and control by commanders.
- (7) Check instructions pertaining to the use of nuclear warheads and compliance with these instructions. Pass to higher umpire/control headquarters information regarding the use of air defense nuclear warheads at altitudes which will have effects on the ground.
- (8) Use simulators to represent the smoke trail that is normally visible during the firing of live missiles. This provides the opposing force a real possibility for locating the air defense unit positions.
- (9) Assess the effect of suppressive fires against air defense units which have been located by the opposing force. Air defense units effectively attacked will have an appropriate number of weapons ruled out of action by the umpire for periods up to 12 hours and casualties will be assessed.
- (10) Determine vulnerability of air defense units to special forces or guerrilla action, and the effective integration of local defense into the area security plan. The ability of the supported force to augment local air defense security elements is also evaluated.

d. When employed in the surface role, air defense fires are marked like other surface-to-surface fires. Umpires will note the air defense situation at the time to determine if diversion from the primary mission was warranted.

e. For air defense weapons employed in a direct fire role in support of ground operations, unit umpires assess and report losses.

126. Airborne Umpires

a. Qualified umpires are assigned to airborne units and follow the procedures outlined for infantry umpires. Airborne umpires are located with airborne units prior to movement from the base camp and report on the proficiency of the units in preparing for the airborne operation. Airborne umpires are also

located at marshalling areas, departure fields, and landing and drop zones to observe and report on the proficiency of airborne units in marshalling for and conducting airborne operations.

b. Special effort is required by all control personnel to portray realistic situations in airborne operations. Because of training safety requirements, drop zone availability, and the gathering of observers and the press, locations and times of drops are difficult to conceal. This can result in an unrealistic disposition of the opposing force around the drop zone. The opposing forces are restrained until the time that they can realistically move into a drop zone area.

127. Armored Cavalry Umpires

Armored cavalry units are controlled and umpired in a manner similar to that for the control of armor. Armored cavalry units are umpired as infantry in the event they operate on foot.

128. Combat Service Support Unit Umpires

The principal duties of the combat service support unit umpire are—

a. To note the location and operational efficiency of service installations.

b. To require observance of realistic time and space factors in performance of unit missions.

c. To determine if the unit makes timely displacements forward with advance elements and if continuous service is maintained during displacements.

d. To note the adequacy and timeliness of information furnished the unit regarding the plans and operations of supported troops.

e. To assess losses in materiel and supplies when installations or movements are subjected to enemy action, and to follow up assessments of losses and damage to ascertain if proper measures for logistical reconstitution are taken. When damages to essential supplies are assessed, such supplies are released after a reasonable period provided action through normal supply channels is simulated.

f. To assess casualties and damages from nuclear and nonnuclear weapons, and to enforce delays warranted by hostile action.

g. To determine the effectiveness of security, cover, concealment, dispersion, multiple supply installations, camouflage, blackout, air defensive measures, rear area security and area damage control measures, evacuation of casualties, and other practices that are necessary in actual combat.

129. Staff Umpires

Umpire/controllers at battalion, brigade, and higher headquarters check the staff functioning and the operations of attached elements. Checklists covering pertinent points are furnished by the headquarters of the exercise director.

130. Air Umpires

a. Duties of Air Force Umpires. Certain duties and responsibilities of Air Force umpires are general and apply to any type of maneuver in which Air Force units participate. These duties are—

- (1) Deciding the results of contacts, taking into account the prevailing tactical factors of control of the air relative forces and firepower, surprise, and unit readiness for action.
- (2) Determining the results of air attacks on ground targets either by means of a radar scoring unit or by reference to damage assessment tables.
- (3) Keeping the chief Air Force umpire/controller and other unit Air Force umpire/controllers informed by timely reports of the results of maneuver plans of unit commanders and movements, actions, and dispositions of Air Force maneuver units and installations; and notifying control headquarters of planned nuclear attacks.
- (4) Focusing the attention of all participants on the training aspects of maneuver play rather than on the achievement of a fictitious "victory" or "defeat", guiding, where necessary, the development of situations to avoid this latter tendency.

b. Coordination of Air and Ground Umpire Functions. In any maneuver involving both air and ground action, situations arise in which air and ground operations interact with each other. The airspace controller is responsible for coordination and control of the airspace over the maneuver area. In some cases, the normal functions of the air umpire tend to overlap those of the ground umpire. Therefore, specific umpiring responsibilities are assigned to air and ground umpires. The following constitute a general guide—

- (1) Air Force umpires are responsible for—
 - (a) All air-to-air contacts. Damage is assessed by using damage assessment tables.
 - (b) All troop carrier responsibilities in the airborne assault or logistical support.

- (c) Air-to-ground targets. The air umpire with a flight transmits to the chief controller through air control channels the following information prior to take-off—

1. Time of takeoff.
2. Estimated time of arrival at target.
3. Number and type of aircraft.
4. Type of armament.
5. Mission and specific targets.
6. Chemical agent, if used; dosage; and area covered.

- (d) All aerial reconnaissance missions, both visual and photographic.
- (e) Damage by hostile attack to airbases and aircraft on airbases.
- (f) Operation of the air control center.
- (g) Logistical support by Air Force aircraft, including—

1. The appropriateness of directives issued for bringing air supply items to loading points.
2. Preparation of loading plans, effectiveness of combat loading, and adequacy of aircraft.

- (2) Army umpires are responsible for—

- (a) In an airborne, airlanded, or helicopter-borne operation, the preparations for enplaning, the efficiency of loading plans in supporting tactical requirements of the forces, the actual jump or landing, and operations of the force thereafter.
- (b) Damage to ground targets by attacking aircraft.
- (c) Damage to attacking aircraft by ground defenses.
- (d) Use and efficiency of logistical support by air.
- (e) Coordination between Army air defense, Army aviation, and other agencies with respect to airspace utilization.

c. Army Aviation Umpires. The mission and duties of Army aviation umpires include measuring the effectiveness and responsiveness of Army aviation units in improving the combat and combat service support mobility of the combat arms and umpiring the employment of armed Army aviation aircraft and units. The firepower scores of the weapon systems employed by Army aviation are given in appendix V and are considered in the determination of relative firepower. Umpires accompany each flight of armed Army aviation, and communicate and coordinate with ground umpires

in assessing casualties and damage on ground units and aircraft. Appropriate tables in appendix VII provide a basis for assessing casualties and damages

inflicted by armed Army aviation. Umpiring of Army aviation employed in a combat service support role is based on paragraph 128.

Section III. UMPIRE CONTROL AND PROCEDURES

131. Control

a. Control at battalion and lower units is accomplished by umpires assigned to units and activities. The combat responses or actions of participating troops are guided by rulings and direct announcements. Control is exercised by the chief umpire/controller through control channels. Continuous communication is maintained between the operating elements of the control and umpire organization.

b. When making announcements, the umpire considers whether, in actual battle, the information would affect an individual, a portion of the unit, or the entire unit. These announcements make each soldier and unit commander aware of the tactical and logistical situations, including the nature of friendly and hostile opposition and civilian reaction.

c. Umpires avoid interfering with troops and do not reveal the location of troops by unnecessarily exposing themselves. Unit umpires comply with instructions on cover, concealment, and use of lights. The movements of unit umpires are not restricted to any particular area. They are allowed the freedom of movement necessary to best perform their duties. The only exception to this is in the area of units with a nuclear weapon capability. Commanders of these units must provide physical security; therefore, provisions are made and caution exercised to avoid conflict with the actual security measures provided for nuclear weapon material. Unit umpires are not required to conform to radio silence, but they exercise caution to prevent revealing the position of the unit.

132. Rulings

a. The umpire renders a prompt and logical ruling in any combat, combat support, or combat service support situation that arises during the exercise. When contact is made between the opposing forces, umpires allow the situation to develop until a tactical ruling is indicated or required. Rulings are based on relative firepower, tactical employment, combat service support dispositions, cover, concealment, terrain, fields of fire, surprise, and maneuver. Careful consideration is given to these factors so that umpiring is not merely a mathematical computation of relative firepower. The umpire takes precautions to prevent bodily contact and injury

or damage to materiel. He makes on-the-spot decisions, based on the current local tactical or combat service support situations, and determines and assesses losses to personnel and materiel. The umpire does not make tactical decisions; these are the responsibility of unit commanders.

b. The umpire decides whether either force is able to advance and portrays the situation accordingly. If, for example, the situation is such that the unit would not be able to advance in actual combat, the umpire "paints the battle picture" by voice or over a loudspeaker to portray intense and accurate hostile fire. In addition, when appropriate, he states that masses of refugees and displaced persons blocking main avenues of approach are considered effective deterrents to the unit's ability to operate successfully. If the unit would be able to advance, the umpire depicts appropriate enemy fire. This affords the commander information which should lead to a decision to advance.

c. Umpires make a ruling when needed for clarification of a ruling previously made. Troops will abide by umpire rulings without hesitation or argument. Umpires assess additional delays, casualties, or damage if commanders or troops do not act in accordance with umpire rulings. The unit umpire advises the next higher echelon in the umpire/control organization of any such incidents.

133. Information Provided Umpires

a. Unit umpires will be furnished copies of standing operating procedures (SOP) in addition to copies of operation and administrative orders of the unit to which assigned. They study the plan of action, scheme of maneuver, and combat service support plan and report needed information to the next higher umpire control echelon through umpire/control communication channels.

b. Information on the strength, disposition, and plans of action of units is furnished the umpires of one side by the umpires of the opposing side. Information is exchanged continuously through direct communication between umpires of opposing sides.

134. Flags and Signals

a. *Umpire Emergency Signals.*

(1) *To stop infantry action.* White flag during the day and a yellow star cluster at night.

- (2) *To stop tank action.* Blue flag during the day and green star cluster at night.
- (3) *To stop all action.* Red star cluster. (The brigade or regimental umpire/controller or higher authority directs the use of the red star cluster and authorizes action to be resumed.) This signal denotes an emergency and is not related to the conduct of the exercise except to stop all action so that measures of an emergency nature appropriate to the situation may be taken.

b. Disabled Vehicles. Orange flag.

c. Simulated Obstacles. Black flag.

d. Aerial Fire Marking. As announced by umpire headquarters.

e. Airstrikes.

- (1) *Aggressor.* Yellow smoke grenades.

- (2) *Friendly.* White smoke grenades.

f. Firing of Tank and Antitank Weapons. When other means of representing are not available, a red flag is waved from the tank or gun position.

g. Nuclear Weapon Strikes. These strikes are indicated by appropriate simulators and augmented by announcements over a portable (vehicle or helicopter) public address system that depict casualty and damage radii.

h. Artillery Fire. Pyrotechnics, simulator, flash, artillery, and other simulators.

i. Forward Edge of the Battle Area.

- (1) *United States.* Cerise (red) panels.

- (2) *Aggressor.* Yellow panels.

j. Air Landing or Airdrops. Use of colored smoke in the area of a scheduled air landing or airdrop is reserved for the unit making the landing or drop for a period of H-30 minutes to H+1 hour.

k. Chemical Strikes. As announced by umpire headquarters.

l. Contaminated Areas. The appropriate standard marker for chemical, biological, or radiological contamination.

135. Emergency Measures

a. If control is lost, the unit umpire halts the action of the unit or units involved. He immediately reports the facts, together with the action he has taken, to the next higher unit umpire who investigates the situation and adopts one of the following courses of action:

- (1) Announces his ruling to the unit umpire concerned.
- (2) Reports the situation to the next higher unit umpire for appropriate action.

b. Action described in *a* above is taken when any of the following conditions exist:

- (1) Safety regulations are violated.
- (2) Existing conditions endanger life or property.
- (3) Exercise boundaries or off limit areas are violated.
- (4) Range fires must be brought under control.

136. All Units Subject to Attack

a. All units in a tactical exercise, regardless of their type, mission, or location, are subject to attack. Dismounted attacks against any unit are umpired in a manner similar to that prescribed for infantry. Umpires assigned to combat support units and combat service support units, as well as those assigned to combat units, are prepared to umpire any engagement in which their units are involved. Umpires advise the unit commanders of the importance of keeping umpires advised of contemplated actions.

b. Attack on a classified nuclear weapon activity at any level is controlled by the unit umpires so that attacking elements remain a minimum of 183 meters (200 yards) from any security area. Umpires assigned to combat, combat support, and combat service support nuclear weapon units will be alert to terminate action early to preclude any misunderstanding on the part of security guards. Security areas are appropriately marked. Guards, couriers, and other personnel directly involved are identified as *neutral* during the period they are concerned with the security of nuclear weapons. When not concerned with the security of the weapons, they may be identified as *player* personnel and subject to the play of the exercise. Umpires assess casualties and losses in the normal fashion regardless of the security and safety restrictions which preclude completing an attack.

137. Infantry Operations

a. Infantry umpiring is based primarily on the actions of company and platoon umpires.

b. Battalion umpires are responsible for—

- (1) Reporting on the functioning of the whole unit, its staff, and any attached units.
- (2) Supervising and coordinating the control exercised by company and platoon umpires. Umpires of small units act to avert physical contact between opposing player forces.

c. The responsibilities of brigade, regimental, division, and higher echelon controllers parallel those of the battalion in *b* above.

d. Platoon and company umpires control action as prescribed in paragraphs 118 through 121 and 131 through 136.

e. The employment of supporting fires at all echelons during all phases of an operation is carefully considered when evaluating relative firepower. For example, the fact that an attacker, during the advance to contact, is subjected to the fires of supporting weapons of the defender is considered in computing relative firepower. In such cases, umpires of the defender obtain and transmit to the appropriate attack umpires timely information of the supporting fires employed. Attack unit umpires assess casualties and delays based on this information.

138. Armor, Armored Cavalry, and Mechanized Infantry Operations

a. The procedures for umpiring armor, armored cavalry, and mechanized infantry action are similar to those prescribed for infantry.

b. When umpire transportation capable of keeping up with the platoon is not available, the armor, armored cavalry, or mechanized infantry umpire rides in the tank or armored carrier of the platoon commander. These umpires are provided their own communication facilities and do not use the radios of the unit they are umpiring. Tanks, armored carriers, and other vehicles that fail to react realistically to enemy fire are ruled out of action by the umpire.

c. Fire duels among tanks, self-propelled guns, and antitank guns are judged on the basis of cover, concealment, position, fields of fire, first aimed shot, caliber of weapons, and whether the tanks are stationary or moving. There is no fixed method of determining the victor. Each action is determined on its merit. In emergencies, blue flags (day) or green star clusters (night) are used to halt all tank action to allow proper evaluation of all factors in order to arrive at a ruling.

d. Safety.

- (1) The umpire slows or stops all armor action when the lives of personnel on the ground are endangered.
- (2) Tanks and armored carriers are not moved unless an observer is in the commander's hatch. If the interphone system is operating, other hatches may be closed. If the interphone system is not operating, all hatches are open so that the vehicle commander, driver, or assistant driver can

observe the ground over which the vehicle is moving.

- (3) The position of friendly and Aggressor forces and the density of the civilian population determine the safety measures to be followed.
- (4) Special instructions are issued for night-time operation of tracked vehicles on roads and across country.
- (5) Personnel on the ground stand when approached by armored vehicles. No additional casualties are assessed against personnel who reveal their positions by reason of approaching armor or mechanized vehicles.

139. Special Exercises

In special exercises, such as arctic, special warfare, amphibious, and airborne exercises, qualified personnel are assigned to the staff of the exercise director to assist in preparing the problem and to the umpire group to instruct the umpires.

140. Night Operations

a. *Offensive.* Umpires of night operation become familiar with the plans and objectives of the unit and make a daylight reconnaissance of the routes and objectives.

b. *Defensive.* The umpire becomes familiar with the terrain, organization of the ground, defensive fire plans, counterattack plans, and signals to be employed. Umpires of retrograde operations become familiar with movement plans.

141. Guerrilla Operations

Guerrilla operations are conducted within or behind both friendly and Aggressor lines. These operations consist of raids, ambushes, reconnaissance, harassment, subversion, and sabotage activities. An umpire is provided for each independent operation. Umpires are qualified in guerrilla organization and operations. They use the umpire/control communication nets to pass information back to control headquarters. Within the control headquarters, a special force controller receives, records, and dispatches information regarding the activities of special forces.

142. Civil Affairs Activities

Control of civilian refugees is stressed in Army maneuvers. Planning for and introduction of realistic refugee activities and control of the civilian population are accomplished from the exercise director's headquarters down through corps and division levels.

During the field exercise, commanders are required by the problems imposed on them by the umpire/controllers to designate routes for the evacuation of refugees and displaced persons, to establish refugee evacuation centers and refugee camps, and to take appropriate action for their care and control. In the event the commander fails to take the required action, the umpire/controller assesses a time delay or other penalty.

143. Nuclear Fires

The control and procedures for nuclear weapon play are in chapter 8.

144. Chemical Fires

a. Toxic chemical play by Aggressor and friendly forces is integrated into all tactical exercises. This tests commanders and staffs in the tactics and technique of toxic chemical employment, as well as troop proficiency in chemical, biological, and radiological defense.

b. Requests for chemical fires are forwarded and processed through normal channels to the action headquarters. On approval of the mission, a copy of the fire mission is presented to the umpire at the action headquarters. This umpire will prepare a toxic chemical attack alert notification which is relayed to the controllers and the unit umpires concerned. Table LV illustrates the form word at that is used for this notification.

c. When the chemical strike is executed, the umpire at the action headquarters, fire direction center, or delivery unit broadcasts the "ON THE WAY" and the "time on target" (TOT) over the general broadcast net to the unit umpires. A takeoff time and the estimated time over target is given in the case of airstrikes.

d. On receipt of the alert notification and TOT broadcast, unit umpires in the target area use the agent effects data to determine the area covered and to relate it to units on the ground. They coordinate the activity of fire markers to simulate the fires. As the attack is marked, unit umpires make detailed observations of individual and unit reactions. On the basis of these observations and the G, HD, or V agent tables, the umpire makes casualty assessments and tags casualties. If appropriate, he informs the unit of the situation that would be known in actual battle.

e. The unit umpire prepares a toxic chemical attack loss report, as illustrated in table LVI; and transmits it to the chief umpire/controller. The report informs control headquarters of losses to units

attacked and allows the controllers to inject intelligence information that informs the attacking unit of results achieved.

f. When persistent chemical agents are employed, umpires accompany or precede player units into contaminated areas and evaluate reactions to the hazards present. Insofar as possible, simulants are employed so that units are able to observe indications of contamination if they are alert to their surroundings; otherwise, umpire personnel provide these indications verbally. Umpires inform commanders of the time restrictions on the safe use of contaminated areas and assess casualties on the basis of unit reactions, protection, and chemical, biological and radiological discipline. Lingering contamination is not played for G agents.

g. In evaluating the play of toxic chemical agents, umpires bear in mind the following general considerations:

- (1) Limitation of weapons to those suitable for chemical fires.
- (2) A commander's cognizance of support from higher headquarters when planning chemical fires.
- (3) Employment of G agents for immediate casualties and a nonpersistent effect.
- (4) Agents employed for persistent effect (HD and VX) used primarily to restrict the use of terrain or materiel, and for defensive operations. These agents have a lingering effect that applies to any troops that enter the contaminated area. If advancing ground units arrive at the contaminated area before the end of the period allowed for decay of contamination, they must delay further advance or the commander must accept resulting casualties.
- (5) A commander's use of intelligence and security in taking maximum advantage of the vulnerability and surprise aspects of toxic chemical employment.
- (6) Command action taken prior to employment of toxic chemicals to insure that protective masks and other individual protective equipment are in the hands of troops, that masks have been inspected as prescribed, and that replacement protective equipment and supplies are available.
- (7) The proficiency with which a commander plans and executes a toxic chemical attack. The effects of attack time, terrain, weather conditions, and exploitation are considered.

Umpires evaluate the availability of accurate weather information and general intelligence activities incident to the attack.

- (8) The umpire considers the variations in effects if the firing units deliver chemical agents in a manner other than that indicated in tables XXXVII and XXXVIII, i.e., duration of fire of over 30 seconds, the employment of G agent in a harassing role only, or the massive employment which will cause a significant effect downwind from the target area. In these cases, the umpire refers to FM 3-10 for guidance or uses his own judgment to estimate possible casualty effects.

145. Biological Agents

Umpiring of biological play integrated into a maneuver is based on evaluations of intelligence activities and general troop proficiency in protective measures. A reporting system similar to that outlined in paragraph 144 may be used for timely transmission of specific essential information through umpire/control channels. Information is reported that is necessary for the unit umpire to determine the time his unit will be affected by the agent, the incubation period, and the duration of the time during which the unit will be under the effects of the agent.

146. Fire Marking Teams

a. Ground and aerial fire marking teams are organized and equipped to mark simulated nuclear, nonnuclear, and chemical fires. These teams provide shell report data to unit umpires and commanders of units affected by these fires (par. 121).

b. Pyrotechnics or other appropriate simulators are used to mark artillery fire in the impact area and, in the case of missile units, at the firing position. (The M-74 flash and sound signal fired in the pistol M-8 or projector M-9 may be used to simulate airbursts.) Simulated hand grenades, ground shell burst simulators, and other suitable pyrotechnics are also used.

c. The use of aerial fire marking teams augmented as required by ground fire marking teams is desirable. Aerial fire marking teams have the advantages of speed and mobility in fire marking and are especially desirable for marking fires deep in enemy territory or in locations not accessible to ground teams. Smoke grenades or other suitable pyrotechnics are dropped in the target area from both fixed and

rotary wing aircraft. A card containing shell report data may be attached by wire to the device used.

d. Fire marking teams are provided based on the number and type of artillery units participating, the anticipated scale of use of special weapons, and the extent of Air Force participation. A study of the exercise directive, troop list, and scenario of the exercise provides a basis for determining the number and types of teams required.

e. Separate fire marker radio nets are required. There should be at least three such nets for division artillery and one net for each corps artillery group so that requests for fires are not delayed.

f. An example of the procedures employed in completing a surface-to-surface nonnuclear fire mission follows:

- (1) The fire direction center (FDC) receives a fire mission.
- (2) The FDC processes the mission.
- (3) As the FDC processes the fire mission, the umpire at the FDC alerts the umpire with the firing battalion and the fire marking team nearest the target or a fire marker control center.
- (4) The umpire at the FDC verifies the firing with the umpire at the firing battalion. He then provides the following information as it becomes available to the fire marking team nearest the target or the fire marker control center:
 - (a) Location and description of target.
 - (b) Number of rounds fired.
 - (c) Type of fuze.
 - (d) Azimuth from target to guns.
 - (e) Caliber of weapons.
 - (f) Chemical agent, if used.
- (5) The fire marking team expeditiously marks the target, furnishes data for shell reports to the troops fired on as specified in (4)(b) through (f) above, and reports "mission completed" to the unit umpire. Casualties and damage resulting from artillery fire normally are assessed by the umpire with the headquarters or unit concerned based on information received from the team marking the fire. The officer with the fire marking team may assist the unit umpire in assessing casualties.
- g. Using umpire/controller and fire request channels, the fire marking team provides the firing unit with information concerning the effects of its fires.
- h. Fire marking teams are trained in marking nuclear, nonnuclear, and chemical fires. This

cross-training allows flexibility in the employment of fire marking teams.

i. Procedures for marking nuclear fires are in chapter 8.

147. Miscellaneous

a. Umpires are assigned to all operative special units, such as intelligence and counterintelligence units, US Army Security Agency units, and electronic warfare units.

b. Adequate numbers of officer umpires are provided to control and evaluate the following:

(1) Agent mission.

(2) Guerrilla mission.

(3) Raid or infiltration mission (unit umpire may be used).

(4) Reconnaissance patrol (unit umpire may be used).

(5) Prisoner of war installations at division or higher echelons (to umpire the handling, processing, and exchange of prisoners). At levels below division, unit or staff umpires may be used.

c. In insurgency and counterinsurgency activities, the surprise attained is weighed more heavily and relative firepower plays a lesser role.

Section IV. UMPIRE RECORDS AND REPORTS

148. Troop Location Reports

Prompt and accurate reports are the foundation of umpire control. Unit umpires at all echelons submit periodic reports. Important changes in the situation or location of units are submitted without delay in the form of special reports. Reports state unit designation, location of the command post, current mission or employment, and additional information pertaining to the current situation.

149. Daily Report

A daily report on unit operations is prepared by

all unit umpires and submitted to the chief umpire/controller through control channels. The period to be covered, the time of submission, and the content or recommendation desired are prescribed by the chief umpire/controller (table LVII).

150. Artillery Control Records

Fire marking teams and fire marker control centers keep records of nuclear and nonnuclear fires. Low-altitude air defense nuclear warheads are recorded. These records are kept in a format similar to the artillery control log maintained at the artillery FDC.

Section V. IDENTIFICATION

151. Identification of Personnel

Personnel are identified as follows:

a. *US Force Troops*. The regulation uniform of the Armed Forces of the United States.

b. *Aggressor Force Troops*. Aggressor uniforms and insignia prescribed in FM 30-101.

c. *Umpires, Except Fire Markers*. A white cloth loop worn on the left side under the arm and over the shoulder.

d. *Fire Markers*. A red cloth loop worn on the left side under the arm and over the shoulder.

e. *Personnel Assigned to the Headquarters of the Exercise Director*. A red and white cloth loop worn on the left side under the arm and over the shoulder.

f. *Observers and Other Neutral Personnel* (including nuclear weapon security forces). A green cloth loop worn on the left side under the arm and over the shoulder.

152. Identification of Vehicles

a. *US Forces*. As prescribed in AR 850-5.

b. *Aggressor Force Vehicles*. As prescribed in FM 30-101.

c. *Umpire Group*. A white flag approximately 1 foot square on a 4-foot staff fastened to the right front bumper of the vehicle.

d. *Headquarters, Exercise Director*. A red and white flag approximately 1 foot square on a 4-foot staff fastened to the right front bumper of the vehicle. The upper half of the flag is white and the lower half is red.

e. *Other Neutral Vehicles* (including those vehicles transporting nuclear weapons). A green flag approximately 1 foot square on a 4-foot staff fastened to the right front bumper of the vehicle.

153. Identification of Aircraft

a. Umpire and controller aircraft are marked with four 12-inch bands alternating white and green

around each wing. Similar markings are placed around the fuselage of helicopters.

b. Nuclear weapon fire marker helicopters are marked with four 12-inch red bands placed around the fuselage.

c. Aggressor aircraft bear the Aggressor markings prescribed in FM 30-101.

154. Identification of Medical Vehicles and Installations

a. Red Cross markings are used on medical

vehicles and installations. On occasion their use is curtailed by the commander for tactical reasons. Medical units and personnel participating in tactical exercises are considered under the protective provisions of the Geneva Convention.

b. Actual casualties and emergency medical supplies are transported in vehicles displaying a Red Cross flag. These vehicles are permitted complete freedom of movement by all personnel.

Section VI. COMMUNICATION

155. General

Umpire communication means normally consist of radio, radio relay, wire, and messenger. For large-scale exercises, communication for umpire/controllers is augmented by the use of helicopters. Wire and messengers are used for routine messages to reduce the volume of radio traffic. Radio communication is necessary for fire marking teams and unit umpires at battalion and below. An extensive wire net, with readily accessible leads to all key localities in the exercise area, is essential to provide adequate communication between control headquarters and unit umpires.

156. Free and Controlled Exercises

In free exercises, identical communication nets are provided for umpires with both sides. Only the fire marker net is required with the Aggressor force in controlled exercises when unit umpires are not assigned.

157. Umpire/Controller Communication Center

An umpire/controller communication center is established in a large-scale exercise to facilitate the review and analysis of umpire reports by the operations section of the control group headquarters. The communication center has sufficient stations to provide one radio receiver for each three battalions or brigades reporting to the operations section. Telephone facilities and teletypewriter circuits are provided as required.

158. Radio Nets

Umpire radio nets are organized in the same manner as, and parallel to, player unit radio nets.

159. Fire Marking

Fire marking teams maintain radio contact with

the unit to which attached. Artillery lines of communication are used for communication between the control team and the FDC's only under exceptional circumstances (fig. 31).

160. Nuclear Weapon Nets

a. Two special communication nets are required for the handling of nuclear weapons. These nets are—

- (1) General broadcast net.
- (2) Fire marking net.

b. The general broadcast net is used to broadcast strike data, TOT, and low altitude air defense nuclear burst information.

c. The fire marking net is used for communication between FDC's of artillery or other units having either a prepositioned or nuclear weapon delivery capability, and nuclear weapon controllers.

d. The fire marking net is characterized as follows:

- (1) The net normally operates on voice but has the capability of operating on radio-teletypewriter (RATT).
- (2) Cryptographic devices, prearranged message codes, and operation codes are used for the security of strike data.
- (3) Particular attention is paid to propagation charts so the best operating frequency is allotted to this net.
- (4) The net is operated on one frequency.
- (5) The net is backed up by a wire system.

e. The general broadcast net is characterized as follows:

- (1) The net normally operates on voice.
- (2) Prearranged messages and operation codes are used for security of strike data.
- (3) The net control station sends a time check every hour on the hour to check radio operation and the reception of transmis-

sions. This enables the fire marking teams to check the reception in whatever area they may be located.

- (4) Particular attention is paid to propagation charts so that optimum frequencies are assigned to this net.

161. Use of Relay Stations

Relay stations are suitably located throughout the exercise area to retransmit messages to the

controller operations room when distance or mechanical difficulties preclude battalion umpires from communicating directly with the communication center at controller headquarters. Radio communication is augmented by telephone and teletypewriter circuits between the relay stations and controller communication center in sufficient number to handle expected peak traffic loads. Relay stations are augmented by personnel to process messages and maintain a limited situation map for the chief umpire/controller and exercise director.

Section VII. UMPIRE SELECTION AND ASSIGNMENT

162. Umpire Sources

If umpires are taken from participating units, created vacancies are filled by junior personnel. This method is undesirable if the unit is participating in an Army Training Test. It is generally more desirable to have the units participating in the tactical exercise at full strength and umpires provided from units and headquarters not participating in the exercise. A disadvantage of selecting umpires from units not participating in the exercise is the loss in training time caused by the preparation and conduct of the exercise (par. 53).

163. Umpire Selection and Assignment

a. Every effort is made to obtain personnel with previous experience for key umpire staff and specialist positions. Officers assigned as unit umpires normally belong to the same branch of service as the unit to which assigned.

b. Officers who are trained in the employment of nuclear weapons are provided for the umpire/controller organization as required.

c. Personnel with special training or background in special forces activities, insurgency and counter-insurgency activities, psychological operations, and airborne and airmobile operations are selected and function in their areas of specialization.

164. Personnel Requirements

a. Personnel requirements vary depending on whether the area or unit umpire system or a combination of both is used, whether the exercise is free or controlled, and the extent to which the umpires are used as evaluators.

b. The personnel requirements set forth in figures 27 through 29 are a guide.

165. Unit Umpires, Armored Cavalry Regiment

Umpires are assigned to the howitzer battery of the armored cavalry regiment on the same basis as to a field artillery battery and to the regimental headquarters on the same basis as to a brigade headquarters. The assignment of umpires to other units of the armored cavalry regiment is on the basis of assignment to similar units of divisions.

166. Special Units and Activities

a. Umpires are assigned to all operative special units such as military intelligence units, civil affairs units, psychological operation units, electronic warfare units, US Army Security Agency units, counter-intelligence units, nuclear delivery and nuclear weapon support units, and special force units.

b. Headquarters, depots, hospitals, and units of a logistical command are assigned umpires on the same basis as comparable headquarters and units referred to in paragraph 164. Umpire requirements are less for those units that stay in the same area for comparatively long periods.

167. Use of Noncommissioned Officers

Qualified noncommissioned officers are used as assistant umpires and may be used as umpires in small-unit exercises.

168. Reporting to Units

Umpires join the unit or headquarters to which assigned one or two days prior to the start of the exercise to permit them to become familiar with the unit, its status, and its missions. The unit to which he is assigned provides class I and III support for the umpire.

Section VIII. UMPIRE TRAINING

169. General

The degree to which the objectives of any tactical exercise are achieved is directly related to the manner in which the umpires and the umpire organization perform their functions. Trained umpires are required in all units and headquarters conducting tactical training. Umpiring is sufficiently important to be a part of the regular training of units and headquarters and in officer and noncommissioned officer schools.

170. The Umpire School

Plans are made for the conduct of an umpire school early in the planning phase of a tactical exercise. Consideration is given to the type and scale of the exercise and the umpire system to be used. Other factors that are considered are the number of umpires to be trained, their previous experience, the time available, the facilities and funds available for training, and the availability of qualified instructors.

171. Umpire Training Program

a. The time required for umpire training may vary from a few hours for a squad or platoon problem to as much as several weeks for a field maneuver.

b. Umpire training includes classroom conferences and demonstrations followed by a reconnaissance of the exercise area and practice in umpiring with troops. The training is planned to present instruction common to all umpires followed by instruction appropriate to the echelons to be umpired and those umpires performing special functions. Emphasis is given to schooling umpires to function at each echelon of command and to those concerned in fire marking, toxic chemical, air defense, nuclear weapons, Army aviation, biological and radiological aspects of the exercise, and the duties and procedures incident thereto.

c. All umpires are instructed on the umpire communication system.

d. The conduct of practical exercises and rehearsals during umpire training affords the chief umpire a means of testing the umpires. The exercises are varied so that umpires develop confidence in their ability to handle all situations likely to be encountered. When circumstances permit, it is desirable that umpires work with units in the field to afford them an opportunity to apply and practice the procedures and techniques taught in the classroom. Small unit exercises are particularly valuable for this purpose and for the orientation of troops in umpire methods, procedures, and techniques. This type of exercise may also be used in the training of large groups of umpires. Those not engaged in umpiring may observe and criticize the performance of others.

e. One or more practical exercises are conducted as rehearsals for umpires prior to the conduct of any tactical exercise. These rehearsals should be conducted over the terrain on which the exercise will be conducted. Simulated nuclear bursts, casualty and damage assessment, and reporting procedures incident to the use of nuclear weapons are rehearsed by all umpires. Fire marking procedures and techniques for both ground and air fire marking teams are also rehearsed.

f. If the umpires are to function as evaluators as well as arbiters or controllers, the checklists to be used for evaluation are prepared prior to conducting the umpire school. Instruction in the evaluation function and in completing checklists is given in the program of instruction.

g. A typical umpire training program is shown in appendix XI.

CHAPTER 7

CONTROL AND UMPIRE CRITERIA

Section I. COMBAT POWER AND RATES OF ADVANCE

172. Combat Power

a. Relative combat power is based on surprise, maneuver, dispositions, cover, concealment, fields of fire, observation, obstacles, effective firepower, and adequate supplies to conduct the planned operation.

b. Guides for the determination of combat power based on effective firepower are as follows—

- (1) If a unit attacks by fire and also maneuvers a portion of its force to strike the opposing force other than frontally, credit the maneuvering element with twice its effective firepower.
- (2) If the attacking unit strikes the defender's flank or rear with its entire force, credit the attacking unit with three times its effective firepower.
- (3) If the attacking unit is predominantly armor or mechanized and strikes the defender's flank or rear, credit the unit with from two to five times its effective firepower to allow for shock action.
- (4) If the attacking unit secures a high degree of surprise, credit the unit with up to five times the effective firepower it would otherwise receive.
- (5) If the defender occupies prepared positions (good advantage taken of fields of fire, obstacles, observation, cover, concealment, camouflage, and individual protection), credit the unit with up to five times the effective firepower it would otherwise receive.
- (6) Failure to observe proper tactical procedures or to provide for adequate supplies with which to conduct the operation results in loss of combat power through assessment of greater casualties and damage.

c. Other than casualties and damage, artillery fire affects opposing combat power as follows:

- (1) Effective counterbattery fire neutralizes opposing artillery units for the duration of the concentration.
- (2) Artillery fire neutralizes the firepower of infantry within the impact area for the duration of the artillery concentration.
- (3) Artillery fire stops infantry movement within the impact area for the duration of the concentration.

d. Observed fires of tanks or self-propelled guns neutralize the firepower of dismounted troops and all other firepower not located in armored vehicles or behind effective natural or artificial cover for the duration of the observed fire. Neutralization is limited to the area being fired on.

e. The effect of smoke on combat power is as follows:

- (1) Tank and infantry units—Reduced 50 percent when unit is being smoked and reduced 30 percent when their target is being smoked.
- (2) Observed artillery fire—25 percent reduction when target is covered by effective smoke concentrations.
- (3) Antitank fire is ineffective against targets concealed by smoke.
- (4) If moving vehicles are obscured by smoke, direct fires against these vehicles are only 10 percent effective.

f. Smoke does not reduce the firepower or effectiveness of guided missiles or of air defense weapons employing electronic fire control.

g. Firepower of units is reduced 10 percent while personnel are wearing protective masks.

h. Nuclear fires neutralize all firepower within areas where 10 percent or more of protected personnel become immediate casualties.

i. Firepower of troops under air attack is neutralized during the period of the attack.

173. Rates of Advance

a. The umpire/controllers decide whether a force is able to advance based on considerations of maneuver, firepower, and combat service support. An attacking unit may advance against an opposing unit when it has a combat power superiority of a minimum of 2 to 1 or, preferably, 3 or 4 to 1.

b. Tables that may be used as a guide for determining rates of advance for infantry, armored, and mechanized units are shown in appendix VIII.

In using these tables, umpires consider the following factors:

- (1) Other than casualties and damage, artillery fires affect rates of advance as follows:
 - (a) Artillery fire on an attacking non-mechanized infantry unit halts the unit in place for 10 minutes.

- (b) Artillery fire on a defending unit permits the attacking force to advance at an accelerated rate depending on the type of attacking unit.
- (c) Artillery fire on mechanized units causes casualties only to personnel exposed—use 5 percent.
- (2) Effects of nuclear fires will be determined by target analysis and probabilities.
- (3) Failure of the attacking force to maneuver as a part of its advance.
- (4) Failure of the attacking unit to play combat service support functions such as the resupply of ammunition.
- (5) The extent to which the zone of advance is impeded by civilian refugees, displaced persons, and evacuees.
- (6) The effects of obstacles, including chemical contamination of terrain.

Section II. FIREPOWER

174. General

a. When contact is made between opposing forces, normally one side is able to apply sufficient firepower to force the weaker to withdraw or be overrun and destroyed. In the application of firepower, consideration is given to the factors of weather, terrain, morale, leadership, and state of training.

b. This section presents a general concept for determining firepower scores of both US and Aggressor units.

c. Changes in organization and armament of units and concepts of employment may necessitate computation of unit firepower scores for units participating in the exercise. The data in this section provide the basis for such computations. When computations are required, the control headquarters prepares and provides unit firepower scores to unit umpires.

175. Firepower Scores—US and Aggressor Weapons

a. To establish a basis for computing the firepower of a unit, a numerical rating or score is assigned to each US and Aggressor weapon. These scores apply only in determining the relative firepower of opposing weapons and not for the purpose of assessing casualties.

b. Tables in appendix V provide firepower scores for US and Aggressor weapons. These firepower scores are computed based on sustained rates of fire, effective width of burst, fragmentation area, and

effectiveness of the weapon in comparison with other weapons.

176. Firepower Scores—US and Aggressor Units

a. The firepower score of a unit is determined by adding the firepower score of each organic weapon within the unit, plus attached and supporting weapons. To simplify computation of firepower, the score is based initially on 100 percent of tables of organization (TOE) weapons. Firepower scores are reduced as casualties and damage are assessed. Only those weapons capable of engaging the target are considered in computing the firepower score.

b. The unit umpire maintains at all times an accurate record of the effective firepower of the unit he is umpiring. To do this, he adjusts the initial firepower score of the unit involved by the percentage of the unit's losses and replacements.

c. Tables in appendixes VI and VII contain the firepower scores of US and Aggressor units at ranges of 300, 500, 700, and 1,000 meters based on 100 percent of authorized weapons.

- (1) Tables XVI through XXIII provide firepower scores for units of US divisions.
- (2) Tables XIII through XV provide firepower scores for Aggressor divisions.

177. Firepower Computers

a. Firepower computers can be prepared to provide unit umpires a quick, easy method to determine

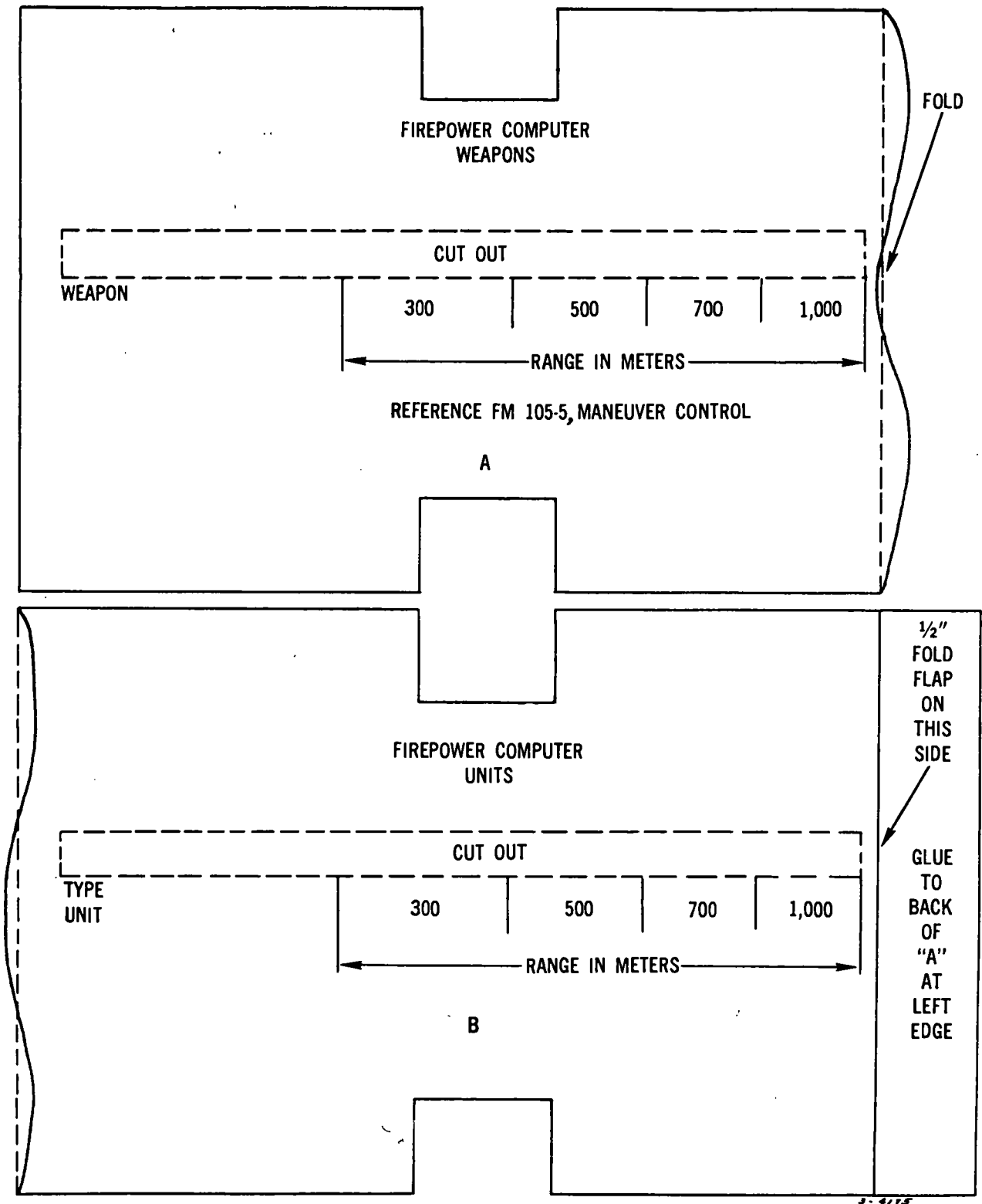


Figure 14. Firepower computer cover.

the firepower of units. The computer consists of a cover and appropriate inserts. The computer cover (fig. 14) shows the effective ranges of US and Aggressor weapons.

b. Tables listing the firepower scores of US and Aggressor weapons and units are reproduced and used as inserts with the cover. A sample insert is shown in figure 15. Additional information concerning firepower and casualty assessment, applicable to both US and Aggressor forces, may be extracted and printed on the back of the inserts.

c. The cover is made from a 4-inch by 11 $\frac{3}{4}$ -inch sheet of 100-pound weight white index paper or similar material. When folded and glued, a 4-inch by 5 $\frac{3}{4}$ -inch cover envelope is formed.

d. Inserts are made from a 5 $\frac{3}{4}$ -inch by 8-inch piece of paper of the same type as the cover. When folded, a 4-inch by 5 $\frac{3}{4}$ -inch insert is formed. Information on US forces can be printed on paper of a color differing from that pertaining to the Aggressor or opposing forces for convenience and ready identification.

e. The firepower computer is assembled by sliding the selected inserts into the cover. Firepower scores for US and Aggressor weapons may be read from side A of the cover, and the firepower scores of units from squad through battalion may be determined from side B.

178. Chemical Fires

a. Plans for toxic chemical attacks, which are part of the fire support plan, show the targets selected, agents to be used, and delivery means. Weapon requirements may be determined with the aid of agent templates or on the basis of ammunition requirements.

b. The time-on-target method of fire is employed when a toxic chemical agent is used for nonpersistent effect. The fires of batteries or battalions are concentrated to arrive on the target area in 30 seconds or less. This type of fire produces casualties through the surprise achieved. The original cloud lingering after the 30 seconds of fire and any additional fires beyond 30 seconds duration will have an additional effect over a greater area against personnel with defective equipment and poor chemical, biological, and radiological discipline. G agent capabilities of various artillery weapons are given in

a sample G agent template guide in table XXVIII. This guide facilitates rapid computation of firepower requirements and area coverage for nonpersistent agents. Each square represents the area in which the designated type and number of weapons can produce 50 percent casualties to unmasked target personnel by the use of G agents. Using the measurements given, control headquarters prepares a G agent area coverage template for use during maneuvers. Code numbers are assigned to each weapon section of the template to preclude dissemination of specific weapon data. Templates are furnished in packets distributed to control personnel, unit umpires, and umpires at headquarters where action is taken on requests for chemical fire missions.

c. Persistent agents are best employed in denial or defensive operations. The most advantageous use normally is to erect obstacles to the movement of opposing forces rather than to cause immediate casualties. Areas contaminated with mustard affect maneuver play as do other types of obstacles, such as minefields and demolished bridges. The initial mustard fire mission should be completed in 15 minutes if possible. Fire missions can be repeated to maintain desired concentrations for as long as a commander deems it practicable. Table XXXVII and XXXVIII, provide the data needed to determine the extent of terrain contamination and casualty effects caused by mustard fire.

d. For training purposes, it may be assumed that each M34 GB-filled bomb cluster produces death among 50 percent of unmasked personnel over an area of 1 hectare. One aircraft with two M10 spray tanks (or the equivalent) can cover an area 70 meters in width and 450 to 550 meters in length with a toxic chemical agent. Three aircraft, each carrying two spray tanks, increase the width of coverage to 150 meters. Spray data are also applicable to smoke employment.

e. When a persistent toxic chemical agent is employed to restrict the use of terrain, a time penalty of at least 4 hours from the time of the fire mission will be imposed on commanders who accept delay rather than cross or go around the contaminated area. The umpire may increase the delay time based on existing conditions, the degree of contamination, and the agent used.

Section III. CASUALTY ASSESSMENT

179. General

a. All losses that affect the progress of action, such as casualties in combat, combat support, and combat service support units and destruction or capture of equipment, supplies, and installations, are considered in umpiring.

b. In small unit exercises, the chief umpire maintains a running record of losses assessed. In large-scale exercises, this record is maintained by umpires and controllers at battalion and higher echelons.

c. The firepower of a unit is reduced by the accumulated losses assessed against the unit.

d. The number of casualties to be assessed and tagged depends on the actions of the opposing forces. Casualties are evacuated through either medical or graves registration channels at least as far as the first medical or graves registration installation. Personal property, individual weapons, and equipment are retained by the individual unless other official arrangements are made.

e. Losses assessed as a result of enemy action are a matter of judgment. The relative strength of the opposing forces is an important factor since the loss rates for inferior forces will be progressively greater. Casualties and damage assessed as a result of a nuclear burst may eliminate the unit, installation, or activity. These losses can be expected and are played realistically. Prior to assessing unusually heavy losses, umpire/controllers coordinate with the next higher control headquarters if there is any doubt concerning the effects of such assessment on the overall play of the exercise.

180. Assessment of Casualties

a. The assessment of casualties imposes a penalty on combat units by reducing their effective strength. When opposing forces are in contact, casualties are assessed in inverse ratio to combat power. For friendly forces advancing with a combat power superiority of 5 to 1, losses to friendly forces will be about one-fifth of those suffered by the opposing force. Failure to apply proper tactical principles or to use concealment and cover, and movement through fields of fire without neutralizing the weapons covering the fields of fire result in the assessment of a high percentage of casualties.

b. The assessment of casualties provides opportunities for realistic training of medical personnel. Casualties evacuated to and released from medical treatment installations are returned to their units

through normal replacement channels. Casualties released from the division graves registration collecting point are sent to the division administration company for return to their units. Casualties are assessed and tagged by unit umpires. The tag shows the name, status (as "walking wounded" or "litter case"), and the specific nature of the wounds. If casualties are assessed because of a nuclear, chemical, or biological strike, medical and other rescue personnel determine if it is possible to enter the area. After appropriate action to determine the hazards in the area, the umpire furnishes the simulated data to permit a decision. If no precautions are taken, umpires assess and tag as casualties medical and other rescue personnel who attempt to enter the area. Appropriate medical care is simulated as casualties are moved to the rear through medical channels.

c. The following ratios of killed to wounded are used as a guide in assessing casualties.

	<i>Killed</i>	<i>Wounded</i>
Tank elements.....	1	3
Artillery elements.....	1	4
Infantry elements.....	1	4
All other ground force elements.....	1	4

181. Infantry Unit Casualty Assessment

Assessment of casualties against an infantry unit (for other than nuclear weapons) in any one day of severe combat seldom exceeds 15 percent. This percentage is considered in computing the total number of casualties assessed against rifle units. The following loss percentages can serve as a guide under each condition described:

a. Fire by opposing infantry—1 to 3 percent per hour.

b. Overrun by tanks or self-propelled guns. Elements within 100 meters of any tank or self-propelled gun:

- (1) Not entrenched—3 percent per tank or 2 percent per self-propelled gun.
- (2) Entrenched or in foxholes—1 percent per tank or self-propelled gun.

182. Artillery Unit Casualty Assessment

Personnel losses to artillery units subjected to counterbattery fire are negligible. Loss data for infantry are used as appropriate in the action considered. When a battery in position is attacked, casualty assessment against attacking and defending troops is based on criteria in paragraph 181 and on the relative firepower of opposing forces.

183. Armored, Mechanized, and Reconnaissance Unit Casualty Assessment

Personnel losses of these units fighting dismounted are assessed on the same basis as infantry losses. Vehicular losses of these units are assessed as prescribed in paragraphs 202 and 203.

184. Casualties from Nuclear Fires

a. Procedures for assessment of casualties from nuclear bursts are in chapter 8.

b. Casualties are assessed in units if they are located in or cross fallout-contaminated areas and do not take proper measures or exceed safe stay times.

c. Contaminated areas of significant dose rates are identified by coordinates or by use of the AN/PDR-T6 radiac survey training set.

185. Casualties from Air Action

Upon confirmation of an air attack, either by tactical air or Army aviation, the umpire marks the target with appropriate colored smoke and assesses casualties in accordance with table XXIX. The table is based on one pass by one aircraft and applies to both fixed and rotary wing aircraft. The areas of coverage, damage, and casualty assessment are adjusted to the number of attacking aircraft and the type of armament. Attempts by the pilot to select the most remunerative target for his attack are considered in assessing casualties.

186. Casualties from Artillery and Mortar Fires

a. *Artillery Fire.* Losses from artillery fire are related to the caliber of the weapon, the area covered, surprise achieved, fuze employed, number of weapons fired, and number of volleys fired. Tables XXX through XXXII list the percentages of loss for artillery weapons using nonnuclear projectiles. In determining losses incurred and the area effectively covered by air defense artillery, tank, and other weapons used in a field artillery role, use the effects data for the weapon which most closely corresponds in caliber to the one being used.

b. *Mortar Fire.* Eight rounds of light or medium mortar (81-mm) or six rounds of heavy mortar (4.2-inch) are considered equivalent to a 105-mm battery volley.

187. Casualties from Mines and Booby Traps

a. When simulated mines with live fuzes are used, the umpire assesses casualties in the following ways:

- (1) For pressure-actuated antipersonnel mines, only the man who actuates the mine is assessed a casualty.
- (2) For a trip wire or actuated antipersonnel mine, 50 percent of the personnel within a radius of 10 meters are assessed as casualties and all mine detectors within this radius are destroyed.
- (3) For a pressure-actuated antitank mine, personnel within a radius of 15 meters are assessed as casualties and all mine detectors within this radius are destroyed.
- (4) For integrated high-explosive (HE) chemical minefields, 10 percent of the casualties from pressure-actuated antipersonnel mines are assessed as chemical casualties.

b. When manually breaching a minefield containing antipersonnel and antitank mines, the following is used:

- (1) Assess 1 casualty per 50 meters of depth when a force breaches a 2-lane path 3 meters wide; 1 casualty per 100 meters of depth when breaching a 1-lane path 1.5 meters wide; and 2 casualties per 50 meters of depth when breaching one 7-meter vehicle lane.
- (2) If the minefield is covered by fire, casualty assessment is based on the type and amount of covering fire.
- (3) When integrated HE chemical minefields are breached, the presence of chemical mines increases the breaching time by 50 percent. Failure to wear protective clothing results in additional casualties.

c. When hasty breaching is used by armor, mechanized, or infantry units, tables XXXIII and XXXIV are used as guides in assessing casualties.

188. Assessment of Casualties from Flame-thrower Action

Losses resulting from flamethrower action are based on the following:

a. *Impact Areas.*

Portable flamethrower----- 10 x 49 meters

Mechanized flamethrower---- 15 x 175 meters

b. *Casualties Assessed.*

25 percent of personnel in the open.

50 percent of personnel in bunkers or fortifications; with open embrasures and doorways.

189. Toxic Chemical Casualty Assessment

a. *General.* Losses from toxic chemical attack are shown separately from other losses. In G agent attacks, casualty percentages are determined largely

by the ability of troops to mask within 9 seconds following the attack. In mustard attacks, percentages depend on the state of CBR discipline, exposure time, and protective clothing available. When a toxic chemical attack alert notification is used, unit umpires will be prepared to observe unit and individual reactions from the moment the attack starts. They can thus make more realistic casualty assessments. After a unit umpire applies assessment data from *b* and *c* below to the local situation, he reports the toxic chemical attack loss through umpire channels. Umpires should stress the importance of satisfactory CBR discipline in reducing personnel losses while making casualty assessments.

b. Casualty Assessments from G Agent Attack.

- (1) G agent casualty assessments are based on the data in tables XXXV and XXXVI. Use of these data simplifies computations of firepower and determination of weapon effects. The dimensions given in the tables represent the areas in which the designated batteries or weapons produce the indicated casualty levels. Templates of the various areas may be constructed to scale and placed in umpire packets.
- (2) The umpire of a unit that sustains an artillery-delivered chemical agent attack receives the toxic chemical attack alert notification. At the scheduled time for commencement of fires, he has the fires marked by means of simulators, smoke, or riot control agent grenades. Using G agent area coverage tables and his own judgment and by observing the reaction of the attacked troops, he determines the casualties achieved by the attack. If a unit does not mask within 30 seconds after the initial rounds, the unit is treated as unmasked.
- (3) Casualty assessment for G agent sprayed from aircraft.
 - (a) Aerial spray of chemical agents may be simulated or actual aircraft may spray a simulant or irritant agent, such as CS or CN (FM 21-48). The unit umpire is alerted by the toxic chemical attack alert notification and places himself where he can best observe the reaction of troops in the area of a size indicated by the G agent tables. Casualties are based on the number of troops within the effects area of the spray. In the case of aircraft spray, the line of aircraft flight is the edge

of the effects area since the agent must flow downwind.

- (b) If the aircraft spray (or ground delivered aerosol) is delivered off target to float on the target and no discernible simulant agent is being used, the unit umpire prepares individuals to simulate the G agent symptoms. This would be the first warning of such an attack. Casualty effects are estimated based on the unit reaction to this warning and the information on expected area coverage in the alert notification.
 - (4) The casualties to be assessed for the fragmentation effect of G agent artillery rounds are 50 percent of those achieved by the equivalent HE round. These casualty levels are determined as for HE fires and reduced by half. They are applied only to those troops which survive the G agent attack. For example: A company of 100 men in the open subjected to a G agent artillery attack receives 30 percent casualties from GB; the casualty level assessed against the troops from the equivalent HE shell is 12 percent. The number of troops that are GB casualties is 30; the casualties from fragmentation are 6 percent of 70 (the unaffected personnel), or 4.2%. Therefore, 4 additional casualties are caused by the fragmentation effect, and the total casualties are 34.
 - (5) Based on unit strength in the area attacked with G agent, the umpire tags the appropriate proportion of personnel as casualties. To add realism to the training situation, a representative percentage of casualties assessed are tagged "chemical agent" and put into the medical treatment and evacuation system. Approximately 25 percent of the casualties resulting from a G agent attack require evacuation.
- c. Casualty Assessment From HD and V Agents.*
- (1) HD and V agents can be employed directly on personnel for casualty effects or on terrain to restrict its use by threat of casualty effects on troops who enter. Casualty assessments among troops in contaminated areas are based on the degree of contamination, the duration of stay in the contaminated area, activity in the contaminated area, and protective measures taken by the troops in the area.

- (2) Criteria for terrain contamination by HD and V agents are in table XXXVII. The casualty levels given for these agents in tables XXXVIII and XXXIX, are based on this degree of contamination. If the contamination levels given are not reached, the casualty levels given must be adjusted proportionally. For example, if the area requires 400 rounds for contamination and only 200 rounds are employed, all casualty levels resulting from the use of tables XXVIII or XXXIX are cut in half.
- (3) Casualty assessments for persistent HD and V agents are based on tables in (2) above. These figures give data that relate time of stay in the contaminated area, decay time, troop activity, CBR discipline, and protection.
- (4) Procedures.
 - (a) The area to be contaminated, degree of contamination, agent, and time of attack are received by the unit umpire. He relates the information to the terrain and the movement of his unit.
 - (b) If the HD or V agents are sprayed or fired on the troops, tables XXXVIII and XXXIX, are used in the assessment of casualties due to initial casualty effects attributed to agent splash. These casualty effects are read in the "1-min"—"Time in Area" line. Subsequent effects (additional casualties) because of stay and activity in the contaminated area are assessed depending on the time of stay in the area.
 - (c) When a unit enters or crosses a contaminated area, the umpire gives the personnel concerned any information regarding the contamination that they would be able to determine based on visual observations, symptoms, and use of detector kits. Based on the conditions, time of stay in the area, time the agent was delivered, and activity of the unit, the umpire uses table XXXVIII or XXXIX, to assess casualties for HD and V agents, respectively.
 - (d) HD and V agent casualties are delayed from 4 to 24 hours, with the spread in time being distributed among the personnel tagged as casualties. In the case of HD all casualties are incapacitated. In the case of VX, 25 percent of casu-

alties are considered "dead" if treatment is given; 75 percent are considered "dead" if no treatment is given. (Treatment consists of training syrette injection or other simulation means.)

190. Biological Agent Casualty Assessment

a. Casualties caused by biological agents are determined by:

- (1) Alertness of troops to the imminence of attack, reaction to indications of biological attack, and warnings and alarms.
- (2) Sanitation procedures and cleanliness in the unit.
- (3) Wearing of protective equipment, such as the protective mask.
- (4) The amount of biological agent delivered and the type of agent.
- (5) Immunization measures taken.

b. The biological agents provided for maneuver play are the hypothetical agents septemfer fever (SF), toledo infection (TI), and lugo fatigue (LF). The casualty effect of these agents delivered by Aggressor weapons is shown in tables XL and XLI. The figures also provide degradation factors for special conditions. The chief umpire may add additional factors as necessary. For realistic evaluation purposes, an actual but harmless biological agent, such as *Bacillus globigii*, may be used. This requires the use of laboratory techniques to determine the extent of the hazard and is not useful for immediate casualty estimation unless the maneuver is spread over a period of several days, in which case swab, water, and solid samples are taken soon after dissemination and cultures are developed to show the actual extent of the biological contamination.

c. The biological agent tables provide area coverage for various weapons as well as the casualty level expected. The tables also include decay time of the aerosolized agent. The chief umpire or the unit umpire determines the time the aerosol cloud will arrive at a particular unit and the distance it will travel to determine the nature of the effect, if any. He uses the incubation period of the agent employed to determine when to assess casualties from the biological attack.

d. If casualties are to be tagged and evacuated, the procedure is essentially the same as for chemical casualties. The lethality and incubation period of the three hypothetical agents are as follows: (see FM 30-102).

Agent	Incubation period	Percentage deaths among infected personnel
LF	2 to 5 days----	Up to 10 percent of untreated cases
TI	1 to 3 days----	90 to 100 percent of untreated cases
SF	1 to 3 days----	2 to 3 percent of untreated cases

191. Assessing Casualties From Radioactive Fallout

Both immediate and delayed casualties are assessed when fallout is played (ch. 8).

192. Civilian Casualty Assessment

Umpires assess simulated civilian casualties re-

sulting from both nuclear and nonnuclear fires. Civilian casualties from nuclear fires are assessed following the procedures in chapter 8. The approximate numbers of casualties are provided by unit umpires to the nearest military unit for necessary action.

Section IV. DAMAGE ASSESSMENT

193. Materiel Damage Assessment

a. Umpire/controllers assess vehicles and other materiel damaged or destroyed on the basis of a reasonable loss expectancy in a similar combat engagement. The umpire informs the occupants and operators of the severity of the damage and completes a damage tag.

b. Damage to mail trucks and to ambulances carrying actual casualties or emergency medical supplies is not assessed.

c. Cargoes of vehicles ruled out of action may be transferred to other vehicles by the using unit, provided such cargo has not been ruled as destroyed.

194. Damage From Artillery Fires

Vehicles passing through or remaining within an artillery or mortar concentration of battalion size or larger are assessed losses as follows:

a. Armored vehicles $\frac{1}{3}$ percent per battery volley (155-mm or larger weapons).

b. Unarmored vehicles . . . 3 percent per battery volley.

195. Damage From Nuclear Fires

a. Materiel damaged by nuclear bursts is assessed using the procedures described in chapter 8.

b. Materiel contaminated by fallout from a surface or near surface burst is considered to have the same intensity of radioactivity as the area in which it is located at the time of contamination. The decay rates apply to the materiel in the area until it is decontaminated.

196. Damage From Toxic Chemical or Biological Contamination

a. Materiel (except class I supplies) contaminated by chemical agent is assessed as slightly damaged; class I supplies are assessed damaged according to the degree of contamination. Personnel handling contaminated materiel are required to wear protective masks until simulated decontamination is accomplished. Vehicles and weapons

must be decontaminated, or operating personnel must continue to wear protective masks for a minimum of 6 hours after contamination. Usual time for decontamination of a vehicle is 30 minutes. Materiel in the target area during G agent attack is not normally assessed as damaged by contamination, but a portion should be assessed as slightly damaged by fragmentation effects.

b. Normally only class I supplies which are not packaged or canned at the time of attack are assessed as materiel losses from biological attack.

197. Damage From Tank and Antitank Fires

a. Fire duels at great range are difficult to umpire. Losses are assessed only when, in the opinion of the umpire, a fair decision can be made.

b. Guns of comparable size are scored on the basis of position as follows:

(1) Ground gun behind natural or artificial cover—two.

(2) Vehicular-mounted gun (armored) behind natural or artificial cover—four.

(3) Ground gun unprotected by natural or artificial cover—one.

(4) Vehicular-mounted gun (armored) unprotected by natural or artificial cover—three.

c. Guns must be laid accurately on the targets. If blank ammunition is not available, a red flag is waved to simulate firing.

d. A method of collective scoring is used if the number of guns or vehicles or both engaged in the fire duel is sufficient to render the foregoing method of scoring impracticable. The umpire determines the total score of each side and rules all or a portion of the weaker side destroyed. Terrain, tactical employment, and duration of the action are considered. Losses to the stronger side are assessed in the inverse ratio of the total scores. For example: Friendly force score is 40; Aggressor score is 30; 20 Aggressor vehicles are ruled destroyed; three-fourths of 20, or 15, of the friendly vehicles are ruled destroyed.

e. When tanks maneuver against tanks, the losses are computed in the inverse ratio of participating tanks of the opposing forces provided they are within effective range. Consideration is given to cover, concealment, position, first aimed shot, caliber of weapons, part of tank exposed, and whether tanks are stationary or moving. A medium tank is considered the equivalent of 1½ light tanks. For example: A friendly force has 10 medium and 15 light tanks; Aggressor has 20 light tanks; losses are computed in the ratio of 2 friendly tanks to 3 Aggressor tanks.

198. Damage From Air Action

Table XLII is used for assessing damage to ground targets by aircraft.

199. Aircraft Destroyed by Ground Fire

a. Duties of air defense battery umpires are prescribed in chapter 6. Adequate air-ground communication is provided so that the air defense battalion umpire can report losses to the air umpire with the flight. When determining the losses to be assessed against aircraft resulting from ground fire, the types of weapons which engage the target are considered. For example, when the target is out of range of gun weapons but within range of surface-to-air missile (SAM) units, only the SAM units are considered to be engaging the target.

b. Losses to flights engaged by guided missiles and number of penetrations are assessed as follows:

- (1) Analyze the effectiveness of the defense by using the burst locator technique explained in FM 44-1.
- (2) Calculate the total number of missiles capable of being fired against a particular aircraft or flight.
- (3) If appropriate, reduce this total number by a percentage factor selected by the umpire to portray a realistic loss in effectiveness due to maintenance failure; lack of operational readiness; improper leveling, orientation, or synchronization; and other shortcomings in the target engagement cycle. SAM system checks and adjustments are accomplished as prescribed in appropriate field manuals and technical manuals.
- (4) Using the factors listed below, which introduce assumed weapon kill probabilities, calculate the total number of aircraft which could be kept from penetrating the defense.

- (5) Compute the number of aircraft penetrating the defense based on the number of enemy aircraft in the raid and the capability of the defense calculated in the preceding subparagraphs. When nuclear warheads are used, umpires modify the conventional warhead factors to incorporate the higher kill probability of the nuclear warhead.

Assumed SAM kill factors

<i>System</i>	<i>Single shot</i>	<i>Salvo</i>
Nike Ajax.....	0.5	0.7
Nike Hercules.....	0.6	0.8
Hawk.....	0.7	0.9

c. Losses of flights engaged by light air defense weapons are the sum of the losses incurred from each type of fire. Criteria for assessment of losses are determined by umpire personnel based on the existing situation. Consideration is given to the approach corridors used by the aircraft, coverage of such corridors by defensive weapons, types of aircraft, number of weapons in the defense, reaction time available to the defense, and engagement time.

d. Friendly aircraft, when not properly identified, are considered Aggressor and losses are assessed accordingly.

200. Damage to Civilian Communities and Property

a. Damage to civilian communities and property during the conduct of combat operations is realistically portrayed by unit umpires so that appropriate civil affairs play may be accomplished.

b. Effective control can be uniformly handled by the publication of consolidated damage assessments at the director's level for all participants.

201. Area Damage Control

a. Realistic umpiring of area damage control operations is essential to proper maneuver control.

b. Umpiring of damage resulting from a nuclear attack requires assessment of appropriate delays in related tactical or logistical activities and umpiring actual area damage control operations.

c. Fire marking teams are provided sufficient personnel to block all routes into the blast area and to halt all movement until essential area damage control measures have been implemented. These personnel are posted at the line of visible damage and are prepared to describe to unit umpires the damage which has resulted from the blast. Umpires of any unit entering the blast area require the unit

to take necessary action and impose appropriate time delays before allowing the unit to proceed.

d. Area damage control operations.

- (1) *Prestrike actions.* The umpire examines the unit SOP and area damage control plans to determine their adequacy. The unit's ability and readiness to implement the plans are also evaluated.
- (2) *Poststrike actions.* The umpiring of area damage control operations requires initiative and imagination on the part of the umpire. He visualizes the damage which has occurred and is prepared to describe it to the commander in detail. He immo-

bilizes the unit, severs its communication, and takes other action to reduce its effectiveness commensurate with the degree of damage inflicted. Because of this requirement, the umpiring of an area damage control play in a free tactical exercise is difficult. It is easier in a controlled tactical exercise where a scenario is provided the umpire to enable him to supervise area damage control play. Umpires of unaffected units outside the area of damage are also able to observe and evaluate the relief and rescue operations of the units which they are umpiring.

Section V. CAPTURE OF PERSONNEL AND MATERIEL

202. Capture of Personnel

a. Selected Aggressor personnel, nuclear delivery units, nuclear logistical units, insurgents, and counterinsurgency personnel may be injected into the exercise for capture by either side as a part of the intelligence play and to provide training in the proper methods of prisoner of war evacuation, treatment, interrogation, and processing. This should include, in the interest of realism, personnel who will speak only a foreign language.

b. Prisoners of war are guarded just as in an actual situation, except that live ammunition is not issued to guards.

c. The chief umpire/controller arranges for frequent exchange of prisoners to avoid keeping too many men out of training. Prisoners being repatriated during exchanges are considered as non-combatants. They are returned to their parent units through replacement channels.

*d. When an entire unit or the major portion thereof has been captured, the umpire authorizes the retention of selected individuals as prisoners of war. He directs that the remainder of the captured personnel be moved to a designated location and kept out of action for a specified period of time. Umpires require capturing units to evacuate prisoners of war promptly. Prepared prisoners make themselves known to the umpire so they can be designated for retention as prisoners of war to be processed. However, as many as possible of the captured personnel are processed as prisoners of war if the time out of action permits and if facilities and personnel are available. Special instructor teams are provided to conduct the training listed in *e* below for entire captured units. These teams are composed of two or*

three qualified individuals operating from the headquarters of the exercise director.

e. When prisoners are detained (by either side), they should be held long enough to receive concentrated instruction in—

- (1) Code of conduct.
- (2) Methods of prisoner of war camp organization.
- (3) Escape and evasion.
- (4) Survival (including in-camp survival).

f. Prisoners of war retain their personal property, individual weapons, and equipment during processing. The capturing or holding unit provides rations and emergency medical care for prisoners of war.

g. Capturing forces or units subject maneuver prisoners to interrogation, indoctrination in opposing force concepts, and exploitation in respect to questionnaires, broadcasts, and written statements, but do not subject them to indignities or physical pressure. Captors remain responsible for the health and welfare of prisoners. In considering the circumstances of capture, proper recognition is given surprise, aggressiveness, stealth, ambush, and mobility so that these factors are tactically rewarded in the play of the exercise. When appropriate, umpires include the following additional items in their daily reports—

- (1) Actions of prisoners while under control of the opposing force.
- (2) Treatment accorded prisoners by their captors.
- (3) Prisoner knowledge of provisions of Code of Conduct Geneva Conventions of 12 August 1949.

203. Capture of Installations and Materiel

a. Installations.

- (1) Medical installations that are captured by either side are returned to parent units as soon as practicable.
- (2) Depots, supply points, railheads, distributing points, and dumps captured by either side are ruled out of action for the duration of the exercise or such other period determined by the chief umpire/controller.
- (3) Installations, supply points, or other activities with classified nuclear materiel are not subject to actual capture but are ruled out of action for the duration of the exercise or such other period determined by the chief umpire/controller.

b. Materiel.

- (1) Vehicles, Army aircraft, weapons, pneumatic equipment, and sonic equipment (except that with fire marking teams) are subject to capture except as noted in (2) and (4) below, and are processed with their drivers and crews to avoid loss or damage to government property. Vehicles, Army aircraft, and weapons ruled captured are

- held in place and out of action for a designated period of time or dispatched to a prisoner of war installation and held there for the period of time designated by the umpire. They are returned to exercise play through normal supply channels. At no time is the driver or crew separated from the vehicle.
- (2) Kitchen trucks and ration trucks are returned to parent units without delay. However, in the interest of realism, minimum delays are assessed. Ambulances carrying actual casualties and mail trucks are not subject to capture.
- (3) Cargoes of vehicles processed with prisoners remain with the vehicles. Transfer to other vehicles is prohibited except that gasoline and blank ammunition may be taken by the capturing unit.
- (4) Tampering with Army aircraft or removal of aviation gasoline is prohibited.
- (5) Security of classified nuclear weapon material will not be violated. Personnel and forces responsible for the security of the material will not be replaced, harassed, molested, or interfered with.

Section VI. OBSTACLES

204. General

a. Obstacles may be simulated but are actually created, if permissible, on the terrain being used. The primary purpose of an obstacle is to delay the opposing force. However, obstacles affect friendly as well as enemy troops and umpires impose appropriate delays in all cases. If the obstacle is to be simulated, the necessary materials and personnel must actually be on hand and checked by the umpire. The obstacle is marked when the time estimated to be required to complete it has passed. Partial obstacles for which insufficient time exists for completion are rated as to effectiveness and marked by the unit umpire at the time work is assumed to have ceased. The state of effectiveness of an incomplete obstacle is noted on the Certificate of Obstacle, table LVIII, (e.g., partial demolition of a bridge reduces the capacity from 40 tons to 5 tons; a partially completed minefield is effective only where mines actually have been laid).

b. The unit that completes or partially completes a simulated obstacle furnishes a guard who is given umpire authority and identification so that he can enforce compliance by all troops. A suggested

means of identification are white strips of engineer tape tied around the headgear and left arm of the guard. Guards remain on duty at obstacles until relieved by the umpire or until the end of the exercise. After the opposing force has reduced an obstacle, the unit umpire relieves the guard who is then returned administratively to his unit.

c. When a simulated obstacle is completed or work is assumed to have ceased on a partially complete obstacle, the unit umpire furnishes the guard one copy of completed Certificate of Obstacle. If an umpire is not present, a unit officer signs the certificate and advises the unit umpire of his action. The umpire checks the form as soon as practicable; however, the statement on the form is valid with the signature of a unit officer. The unit executing a simulated obstacle places a black flag at each end of the obstacle.

205. Reducing Obstacles

a. The time required to reduce an obstacle is determined by the nature of the obstacle. This can be determined from the description contained in the Certificate of Obstacle. If the obstacle is

covered by fire, the time required by the opposing force to reduce the obstacle is greater and casualties are assessed in accordance with instructions contained in paragraphs 179 through 192.

b. Time required to breach minefields.

- (1) When minefields comprise practice or simulated mines, the opposing troops are required to breach the minefield using approved techniques.
- (2) When the minefield is simulated, the time required for breaching can be calculated from appendix VIII.

206. Engineer Data

The time for completion of various engineer tasks, including breaching data, construction data, and repair of obstacles, can be calculated from FM 101-10, FM 5-35, and FM 20-32. Realistic time-distance factors involved are used and added to the completion times as appropriate.

207. Delays and Casualties

a. Obstacles that result from air action, nuclear attack, toxic chemical or biological contamination, and radiological contamination are marked by the ground umpire who assesses the damage. He completes the certificate, places the flags, and details a guard from the nearest unit.

b. Troops may go around an obstacle provided the movement is actual. The umpire with a delayed unit does not modify the provisions of the certificate of an obstacle under any circumstances.

c. Areas contaminated by toxic chemicals and fallout must be recognized by combat elements. Units failing to avoid contaminated areas or take the necessary precaution are assessed appropriate casualties.

d. Marching columns or convoys attacked by air, armor, or artillery and prevented from reacting logically by administrative restrictions are assessed delays equivalent to the time required to disperse and assemble.

e. Personnel working on bridges, roads, or other projects who are subjected to massed mortar or artillery fire or an air attack are required to cease work for the duration of the concentration or attack. Work may continue if the area is subjected to interdiction fire only, but no work can be carried on in an area subject to direct small arms fire.

208. Obstacles From Air Action

Air attacks against bridges and the delays resulting from the inflicted damage influence the progress

of a tactical exercise. Prior notice of air attacks on bridges is furnished Army controllers by Air Force controllers in order for an umpire to be at the bridge site at the time of the attack. When the bridge is defended by an air defense unit, the air defense unit umpire is designated to act as the umpire at the bridge site. The number and weight of bombs and number of hits on target are given the umpire at the bridge site through umpire channels. The umpire uses the following as a guide in assessing delays and damages to bridges—

a. *Steel Truss and Concrete Bridges of Substantial Construction* (fig. 16).

Bomb weight	Delay (after arrival of men and material)	Requirements for repair
100 lb.-----	None----	None.
300 to 600 lb.-----	2 hr.-----	1 engineer plat, 3 trailer loads timber or equivalent.
1,000 to 2,000 lb.----	4 hr.-----	1 engineer plat, 6 trailer loads timber or equivalent.

Figure 16. Delay and requirements for repair-steel truss and concrete bridges of substantial construction.

b. *Wooden Highway and Railroad Bridges.* A 100-pound or heavier bomb causes the same delay and requirements for repair shown for 300- to 600-pound bombs in figure 16.

c. *Ponton Bridge.* A 100-pound or heavier bomb requires a 1-hour delay after material for one-third or four spans of the bridge is placed at the site.

d. Conditions in a, b, and c above are for one hit; for more than one hit, delay and requirements for repair are increased accordingly.

209. Obstacles and Delays From Nuclear Fires

Following procedures stated in chapter 8, the fire marking teams inform unit umpires of the actual ground zero and damage effects criteria for the weapon. From this information, the unit umpire determines the extent of obstacles or other damage and casualties in his particular area. He uses this information in umpiring situations in the affected area. Delays are assessed in accordance with time required to clear the obstacle. The rate of clearance of simulated tree blowdown resulting from a simulated nuclear burst is 250 meters square per engineer bulldozer and associated equipment per hour.

Section VII. CASUALTY AND DAMAGE TAGS

210. Casualty Tags

Umpires use figure 22 when assessing casualties.

211. Damage Tags

a. Slightly Damaged. A green tag bearing the words "slightly damaged" (fig. 23) is used to denote slightly damaged materiel.

- (1) The umpire assessing the damage fills out the front of the tag and enters time, date, and place the equipment was damaged. The unit and the bumper number (or other equivalent number) are entered in the spaces provided. The nature of the damage is briefly described. The driver or noncommissioned officer (NCO) in charge of the vehicle or equipment signs on the back of the perforated stub. The umpire signs the tag and the stub. The stub is retained by the umpire, and the tag is tied to the equipment or vehicle. All stubs are forwarded to umpire/control headquarters. An orange flag is displayed on the damaged vehicle or equipment.

- (2) The driver or NCO in charge determines a course of action to be taken to repair the vehicle or equipment. The individual completing the repairs fills out the back of the tag. An officer or NCO in charge of the repairing unit, or the driver in case of first echelon repairs, signs the tag. The tag and the orange flags are removed from the vehicle or equipment and turned over to the umpire of the unit making the repairs. The umpires send all tags with their reports to umpire/control headquarters where a check is made to ascertain that all vehicles and equipment tagged as slightly damaged have been properly repaired (simulated) and that proper logistical factors are taken into account.

b. Severely Damaged. A red card bearing the words "severely damaged" (fig. 24) is used to denote severely damaged materiel.

- (1) The umpire's procedure in filling out this tag is the same as in *a*(1) above.
- (2) The driver or NCO in charge of the equipment or vehicle contacts his unit commander to have the equipment or vehicle evacuated for repairs. The unit making the repairs fills out that portion of the

back of the tag pertaining to repairs. An officer or NCO of the unit making the repairs signs the tag. If it is decided to replace the item, that portion of the tag pertaining to replacement is completed. An officer or NCO of the issuing unit signs the tag. In either case, the completed tag is turned over to the unit umpire who forwards it to umpire/control headquarters. A check is made to see that all vehicles and equipment tagged "severely damaged" have been properly evacuated and repaired (simulated) or replaced and that proper logistical factors are taken into account.

c. Destroyed. A white tag bearing the word "destroyed" (fig. 25) is used to denote destroyed materiel.

- (1) The umpire fills out the tag as in *a*(1) above.
- (2) The driver or NCO in charge of the vehicle or equipment remains in place for 1 hour. The unit reports the combat loss through channels. When the replacement item is available at brigade trains, the unit is notified to come and pick up the replacement. The vehicle or equipment is taken to the point of delivery where the tag is removed and the equipment is placed in service. An officer or NCO of the issuing office fills out the back of the tag, signs it, and turns it over to the unit umpire. The tag is forwarded to umpire/control headquarters where a check is made to see that all destroyed vehicles and equipment are properly replaced.

d. Contaminated. A blue tag bearing the word "contaminated" (fig. 26) is used to denote contaminated materiel.

- (1) The umpire fills out this tag as outlined in *a*(1) above.
- (2) Personal equipment is decontaminated by the individual. The driver or NCO in charge of contaminated equipment or vehicles contacts his unit commander to have the equipment or vehicle decontaminated. The unit performing the decontamination fills out that portion of the tag pertaining to decontamination and signs the tag denoting the method used in decontamination. The completed tag is

turned over to the unit umpire for forwarding to umpire/control headquarters.

e. When an item of equipment or materiel is both damaged and contaminated, two tags are

placed on the item and proper action taken as outlined above.

f. Tags and stubs are numbered serially prior to issue to facilitate matching at umpire headquarters.

CHAPTER 8

CONTROL OF SPECIAL WEAPONS

Section I. PLAY OF SPECIAL WEAPONS IN TACTICAL EXERCISES

212. Scale of Warfare

Since the employment of special weapons varies with the type of warfare, not all tactical exercises include special weapon play. For those exercises in which special weapons are employed, the destructiveness and lingering effects of the weapons are considered in the planning and conduct of the exercise.

213. Relation to Player Activity

Control activity corresponds closely to the amount of player activity in special weapon play. Figure 17 shows the relationship between the type of exercise and the relative amount of player activity in the various categories of special weapon activity.

214. Control Function and Activities

a. The umpire/control organization has a role in each category of activity shown in the left-hand column of figure 17. Control must either calculate effects or furnish players the appropriate amount of

information so players can calculate effects. Control integrates initial attack (or burst) reporting and radiological survey, monitoring, and control into the play.

b. To feed data back to players, control uses a technique comparable to backward planning. Control anticipates what information and data players must have and then works backward through the sequence which players use to gather information in order to plan the step by step release of information to players.

c. Control techniques and procedures closely follow those that players use in the employment of special weapons. The umpire/control organization is also in a unique position to evaluate player performance in each category of player activity. This is particularly true in the planning and coordination of employment of special weapons and in the reporting procedures connected with their employment.

d. The function of control is further explained in terms of examples of special weapon employment in

Activity	Map exercise	Map maneuver	Type of exercise		Field maneuver
			Command post exercise	Field exercise	
Target acquisition and poststrike reconnaissance.....	X	X	X	X	X
Planning and coordination of employment.....	X	X	X	X	X
Reporting procedures.....		X	X	X	X
Nuclear, chemical and biological initial reporting.....			Partial	X	X
Radiological monitoring and survey.....			Partial	X	X
Effects					
Casualties.....	X	X	X	X	X
Damage.....	X	X	X	X	X
Obstacles.....	X	X	X	X	X
Fallout.....	X	X	X	X	X
Contamination.....	X	X	X	X	X

X indicates training benefit.

A blank indicates insignificant benefits.

Partial indicates some benefits may accrue.

Figure 17. Player activity in the employment of special weapons.

different tactical exercises in subsequent sections of this chapter.

215. Control Organization

When special weapons are played in any tactical exercise, the umpire/control organization must be compatible with player organization and staffing. The umpire/control organization is generally organized along the same lines as players in the special weapons area at each player echelon. For example, if players use the fire support element and the chemical, biological, and radiological element of the

tactical operation center, then control must be prepared to parallel the player organization.

216. The Exercise Directive

The exercise directive specifies the type and scale of special weapons play. It sets the stage by stating in the general and special situations the reasons for employment of special weapons. It may specify the level of special weapons play by allocating weapons to each side and informing the opposite side in appropriate intelligence documents of the opposition's capabilities for employment.

Section II. MAP MANEUVERS

217. Employment of a Nuclear Weapon by a Player Division

a. The sample incident presented below illustrates the control procedures to be followed in the nuclear weapon play of a map maneuver.

b. The Blue player division in this instance has a nuclear weapon allocated and is carrying the weapon in its special ammunition load. In the play of the maneuver, the Blue player division has developed a suitable target in the Red player division's reserve and through the normal processes the Blue commander has decided to fire the weapon.

c. In accordance with the corps SOP and his own (Blue) division SOP, the Blue division commander notifies corps and his subordinate units of the planned use of the weapon and alerts the delivery unit. Therefore, control receives notification through several channels that a nuclear event is to take place. The control staff should have anticipated the Blue commander's decision because of the intelligence buildup which control furnished Blue units and by monitoring the planning action of the Blue division.

218. Initial Control Actions

a. As a consequence of its monitoring actions, the control staff is in a position to judge if Blue player procedures for the employment of special weapons are sound. Evaluation and critique of either Red or Blue player procedures may be an assigned task of the control staff.

b. On receipt of the notice that the Blue division plans to employ a nuclear weapon, the chief controller alerts all control staff sections to the imminence of the nuclear strike. Each section completes its preparations for actions that will be required by the strike.

219. Action by the War Gaming Section

a. The nuclear strike is integrated into the tactical play by the war gaming section.

b. The war gaming section, using the appropriate nuclear play calculator, determines if the round detonated or was a dud, the height of burst (if appropriate), and the actual ground zero (where the round actually detonated). The war gaming section also determines when it detonated. Again using the nuclear play calculator, the effects are calculated and applied to the tactical situation existing at the time of detonation. If fallout or other contamination results from the burst, additional control actions are taken.

c. The war gaming section evaluates the effects from the burst by applying the appropriate radius of damage templates to the target at the time of detonation. Casualties, damage to vehicles and equipment, and obstacle effects are assessed. The effects assessed against the target then become the basic data for transmission of information to players and for reports by various controllers.

d. The war gaming section uses standard forms and formats to set up data for use by all controllers.

- (1) The basic data worksheet is table LX. The completed form becomes the basis for preparation of table LXI Observer's Initial Report (NBC 1); control and assessment team (CAT) reports; normal unit status reports; special strength reports; and other appropriate reports. Other tables are useful in completing table LX. The nuclear burst worksheet, table XLIV, Personnel Exposure Criteria, may be used as specified or the protected versus exposed criteria modified by the conditions in the exercise may be used. Tables XLV through XLVII

assist in working backward to obtain the sighting reports discussed below.

- (2) Players receive Observer's Initial Report (NBC 1) table LXI, so they may determine where and when the round landed and its characteristics. A minimum of three NBC 1, Observer's Initial Reports, are prepared by the controller responsible for the nuclear event for introduction of each nuclear strike into the play. If the burst can be observed by both Red and Blue player elements, an additional minimum of three NBC 1 reports are prepared and introduced. Generally, injection is at the company and battery level in order to exercise the reporting system, except in those exercises where participation does not extend to this level. Each event is injected into a minimum of three different units which can observe the burst. Basic information to be inserted for any one strike does not exceed the true reporting capability of the players to whom it is released. For example, for the unequipped and untrained observer, the time of detonation and a general direction (expressed no closer than the 16 points of the compass) are perhaps the only information which is injected; while for units such as artillery, the injection includes such information as flash-to-bang time, direction within 100 mils, cloud top height in mils from the observer post, and surface, air, or low air bursts. The information released to different players for any one strike is not necessarily in complete agreement. Elements vary so that perfect triangulation does not result. However, for exercise purposes, the time of burst in every case is the same for any one strike. By keeping variations within reasonable limits, the correlation of raw material provides effective play for player staffs while still not making correlation impossible.

e. When fallout results from a nuclear burst, the war gaming section prepares table LXII Worksheet for Radiological Fallout, secures or prepares the necessary fallout plots, and—

- (1) Assesses personnel casualties in the contaminated areas.
- (2) Prepares data for release to players so they can determine the area of anticipated and actual contamination.

f. Standard formats which players use and expect to receive from control are tables LXIII through LXVI. These formats apply to the various phases of radiological reporting. Table LXVII, Radiological Data Sheet (monitoring), and table LXVIII, Radiological Data Sheet (aerial survey), are prepared to comply with player orders to subordinate elements for survey and monitoring. Effective wind messages are continually disseminated by the control staff to players. If problem weather is predetermined, controllers may prepare in advance a set of radiological contamination diagrams (see discussion with table LXII).

g. Tables XLV through XLIX are used in calculations of casualties and survey data.

h. When the war gaming section has completed assessment of all casualties and damage to units and posted its status boards, assessed obstacles created within the area, and applied the fallout and obstacle plots to the master control map, the staff and unit controllers can proceed to pass information to players.

220. Subsequent Control Actions

a. From the data and plots developed by the war gaming section, staff and unit controllers prepare reports to be given to players. Controllers follow through and monitor player actions to insure thorough play of the problem. In the illustrative example in paragraph 217, the controllers prepare and submit to players the reports discussed above, using the formats in appendix IX. Next, the player unit against which the weapon was used (Red) initiates actions in accordance with its (Red) SOP to determine the extent of damage and to reestablish control. Controllers prepare reports corresponding to those made by the control and assessment teams or area damage control units as their work progresses (see discussion of damage, below). Control, representing subordinate Red player units, receives orders from Red player division headquarters for reconstituting the reserve, evacuating casualties and dead, evacuating damaged equipment, control of stragglers, and others as appropriate. Control, representing the corps headquarters, receives special strength reports, status of equipment reports, correlated survey data, requests for assistance, and similar related actions.

b. Controllers assess damage realistically and resultant conditions, such as effects on communication in the area, damage to roads, railroads, and buildings, tree blowdown and fires, cratering, and

rubble are described in detail. Where effects extend into other areas, the initiating control staff member is responsible for coordination. The logical control agency is responsible for inserting loss and damage information developed by the control staff into player channels. Damage evaluation should be provided to the players in two degrees of completeness:

- (1) The first is a "hasty evaluation" giving a rough estimate of the damage received. This hasty evaluation is stated in broad terms and contains some inaccuracies and many omissions. It is released to players after they have initiated actions which could have resulted from the hasty evaluation.
- (2) The "refined evaluation" of damage is developed and injected in much the same manner as the hasty evaluation. However, this evaluation represents a considerable amount of player work in determining, to a relatively accurate degree, the estimated extent of damage; therefore, it is released at a later time when controllers have simulated

the necessary actions which would result in this more detailed and accurate evaluation. In order that play of reporting damage evaluation may be conducted within the time of the exercise, refined evaluations are not withheld from players longer than 8 hours after the strike. Where players have taken no reasonable amount of action to obtain a damage estimate, controllers may release incomplete data or make requests from higher headquarters in order to stimulate players. Actual release times are determined by controllers based on severity of damage and degree of player simulation of actions to evaluate damage.

c. The player division which fired the weapon (Blue division) also attempts to assess damage and to integrate this information into its plans for fire and maneuver. After dispatch of the initial burst reports, control anticipates Blue player's employment of various means to determine the success of his strike and his preparations to play these means against the opposing counterreconnaissance efforts by the Red division.

Section III. COMMAND POST EXERCISES

221. General

a. Compared with the map maneuver discussed above, the sequence of actions in a one-sided CPX does not change appreciably. Special weapons play is accomplished in the appropriate Army staff sections in accordance with current doctrine. Subordinate controllers integrate special weapons in a manner similar to their corresponding player echelons.

b. Control must be capable of assessing special weapon effects on the Aggressor forces it is playing as well as on player forces.

c. The control staffs should prepare as much special weapons data as possible prior to the beginning of the exercise. These data can be correlated with the schedule of events explained in chapter 5. If these events involve Aggressor employment of special weapons, the majority of the effects can be precalculated to facilitate injection when the strike occurs.

d. Application of special weapons play is further illustrated by examples of employment described below.

222. A Preplanned Aggressor Weapon Delivered in the Army Rear Area

a. Actual firing and control of the major actions in special weapons play are assigned to the controllers in whose area the burst occurs. The assignment of preplanned Aggressor strikes is made in the schedule of events.

b. Reports shown in appendix IX are prepared in advance and released to players. Damage reports which player control and assessment teams and area damage control units develop are also prepared in advance. Survey and monitoring reports are released to players after their initiation of appropriate actions to obtain this information.

c. The schedule of events also indicates expected or anticipated player actions to counteract the effects which Aggressor has achieved such as destruction of supplies, casualties among personnel, and damage to installations, equipment, or lines of communication.

223. Aggressor Strikes on Targets of Opportunity

a. Aggressor strikes on targets of opportunity are more difficult to portray because of time limitations

in computing data. Some time can be saved by pre-computing fallout plots. Since control employs this type of strike to guide or regulate play during the conduct of the exercise, only those effects necessary to that end need be assessed against players.

b. Care is taken that Aggressor use of weapons remains within the parameters of allocation of weapons, accuracy of delivery systems, ability to acquire targets, and response of the delivery system. Effects assessed correspond to the environment of the problem such as weather and winds.

224. Request by Player Corps for Air-Delivered Weapon Against Aggressor

a. Initially, the exercise activity generated by play of this type involves Army controllers acting as players in processing and approving the strike. It is assumed that the intended target lies within the Aggressor area for which the corps control echelon has responsibility (fig. 7). Execution of the strike

against Aggressor is then passed from field army control to corps control, using air/ground agencies at both levels. As in a map maneuver, corps controllers use the appropriate nuclear play calculator to determine if the weapon detonated, and where and when the detonation took place.

b. Corps controllers determine the effects of the burst and fallout data (if appropriate), and apply them to Aggressor forces in the target area and to subsequent Aggressor operations if residual effects are present. Players may make poststrike reconnaissance or other efforts to determine the results of their strike. These efforts are handled as normal intelligence activities.

c. Control coordinating procedures are established and adhered to in keeping track of Aggressor losses and in recording damage, obstacles, and contamination in areas of exercise play. Corps control informs field army control, subordinate division controllers, and adjacent corps of losses and effects.

Section IV. FIELD EXERCISES AND FIELD MANEUVERS

225. General

a. Special weapons play in field exercises and field maneuvers is integrated with other supporting fire effects. The troops and units on the ground are informed expeditiously by the umpire/control system of special weapon effects and contamination.

b. The procedures for integrating special weapons play into the control system at brigade and higher level is similar to the special weapon employment procedures used by player units.

c. The lowest level at which effects are calculated by the control organization is normally at battalion umpire level for both combat and combat support units. In addition, close cooperation between artillery and combat unit umpires is necessary for successful portrayal of the situation resulting from the employment of special weapons.

d. A weapon employed against a combat unit attached to a brigade in a two-sided field exercise is used below to illustrate integration of special weapons play into a field exercise. The umpire/control system employed is shown in figures 27, 28, and 29.

226. Control and Umpire Actions

a. Blue brigade control is informed by its opposite (Red brigade) control or its own umpires (directly from battalion or division) that a weapon is to be employed against one of its subordinate (Blue) battalions. Opposing (Red) control has already employed the nuclear play calculator to determine

if and where the round will detonate, and has determined when it will detonate. Blue brigade control takes into account the yield of the weapon, anticipated time of delivery, and the tactical situation in determining which control or umpire echelon will have primary responsibility for execution. In this example, it is assumed that the Blue brigade assigns the responsibility to its supporting artillery battalion and notifies the battalion under attack and adjacent unit umpires.

b. The artillery battalion umpire determines the effects from the nuclear play calculator and assigns an appropriate number of fire marking teams to assist unit umpires in portraying the strike and assessing casualties and damage. The artillery umpire informs the battalion umpire concerned and adjacent unit umpires of the effects to be assessed. The artillery umpire secures additional fire markers or action teams from division artillery if required. Blue brigade control monitors to insure adequate portrayal of the nuclear strike. The fire marking teams also inform unit umpires of the effects and assist unit umpires in assessing casualties and damage as required.

c. Umpires and fire markers use simple criteria for casualty and damage assessment given in chapter 7. Umpires carry prepared tags to expedite assessment. Personnel and vehicles receive specific individual effects such as "wound in the left shoulder," "killed

by radiation," or "antenna and windshield torn off," and not "85% damaged."

d. In cases where units suffer serious attacks to the extent that mass casualties and serious damage are created, umpires must be prepared to portray the effects to incoming player control and assessment teams and area damage control units.

e. The umpires and controllers with Red forces (which fired the weapon) are prepared to respond to Red poststrike reconnaissance efforts to obtain the results of the strike. Since tree blowdown, personnel casualties, and equipment damage will not actually be visible, Red umpires must "paint the picture" for the players.

f. If radiological monitoring and survey become necessary as a result of the employment of atomic demolition munitions or the occurrence of surface or near-surface bursts, controllers and umpires provide appropriate instrument readings from surveys and monitoring stations that players would employ. Generally, it is not feasible for controller or umpires to provide readings to players for immediate transmission as surveys are being made. Players are required to outline for the umpire the route to be traversed, actually traverse the route, and on return receive the appropriate completed format (tables

LXVII and LXVIII). In this manner, control has time to calculate the fallout pattern based on current (not planned) wind data and to plot the survey route against the fallout pattern to determine what the readings would be. Control prepares fallout plots at a high enough echelon where adequate work space and personnel can be provided. This work is seldom accomplished below division level.

227. Field Maneuvers

The techniques and procedures for the employment of special weapons in field exercises apply equally to field maneuvers.

228. Air-Delivered Weapons

An additional control factor is considered when special weapons are delivered by Air Force means. Since the delivering agency determines if the weapon was delivered, what yield was achieved, and where and when delivery was accomplished, Air Force controllers pass this information expeditiously to Army controllers in order that effects can be incorporated into ground play. If this cannot be done, Army controllers may simulate Air Force delivery and perform the required nuclear play calculations.

APPENDIX I

REFERENCES

AR 220-55	Field and Command Post Exercises.
AR 320-5	Dictionary of United States Army Terms.
AR 320-50	Authorized Abbreviations and Brevity Codes.
AR 350-1	Army Training Policies.
AR 350-30	Code of Conduct.
AR 380-5	Safeguarding Defense Information.
DA Pam 310-5	Military Publications Index of Graphic Training Aids and Devices.
JCS Pub 1	Dictionary of United States Military Terms for Joint Usage.
JCS Pub 2	Unified Action Armed Forces.
FM 3-5	Chemical, Biological and Radiological (CBR) Operations.
FM 3-8	Chemical Corps Reference Handbook.
FM 3-10	Chemical and Biological Weapons Employment.
FM 3-12	Operational Aspects of Radiological Defense.
FM 5-34	Engineer Field Data.
FM 5-35	Engineer Reference and Logistics Data.
FM 6-20-1	Field Artillery Tactics.
FM 6-20-2	Field Artillery Techniques.
FM 6-40	Field Artillery Cannon Gunnery.
FM 19-40	Handling Prisoners of War.
FM 21-5	Military Training.
FM 21-30	Military Symbols.
FM 21-40	Small Unit Procedures in Nuclear, Biological and Chemical Warfare.
FM 21-41	Soldier's Handbook for Chemical and Biological Operations and Nuclear Warfare.
FM 21-48	Chemical, Biological, and Nuclear Training Exercises and Integrated Training.
FM 27-10	The Law of Land Warfare.
FM 30-5	Combat Intelligence.
FM 30-7	Combat Intelligence, Battle Group, Combat Command, and Smaller Units.
FM 30-17(C)	Counterintelligence Operations, Intelligence Corps, US Army (U).
FM 30-101	Aggressor, the Maneuver Enemy.
FM 30-101-1	Aggressor, the Maneuver Enemy; Esperanto Language.
FM 30-102	Handbook on Aggressor Military Forces.
FM 30-103	Aggressor Order of Battle.
FM 41-Series	Civil Affairs Manuals.
FM 44-Series	Air Defense Manuals.
FM 100-5	Field Service Regulations, Operations.
FM 100-10	Field Service Regulations, Administration.
FM 101-5	Staff Officer's Field Manual, Staff Organization and Procedure.
FM 101-10	Organizational, Technical and Logistical Data, Part I.
FM 101-31-1, -2, and -3	Staff Officer's Field Manual, Nuclear Weapons Employment.
FM 105-6-1 (C)	Nuclear Play Calculator (U).
FM 105-6-2	Nuclear Play Calculator.

FM 105-6-3
TM 3-210
TM 23-200
ATP 20-5

Aggressor Nuclear Play Calculator (to be published).
Fallout Prediction.
Capabilities of Nuclear Weapons.
Army Training Program for Field Exercises and Maneuvers.

APPENDIX II

SAMPLE DOCUMENTS FOR A PLATOON FIELD EXERCISE

Example 1. TYPICAL BATTALION DIRECTIVE
HEADQUARTERS
1ST BATTALION, 70TH INFANTRY
Fort Benning, Georgia

23 October 19__

SUBJECT: Preparation of a Rifle Platoon Field Exercise

MEMORANDUM TO: Captain Daniel O. Brown
Company A, 1st Battalion, 70th Infantry
Fort Benning, Georgia

1. The 1st Battalion, 70th Infantry, will conduct rifle platoon field exercises during the period 10-14 November 19__. This exercise will involve the rifle platoon in a daylight attack, using live ammunition in the assault phase. You will prepare and direct the exercise.

2. Situations will be developed to provide training in the following:

- a. Initial and subsequent orders of troop leaders.
- b. Use of combat formations.
- c. Fire and maneuver.
- d. Assault, reorganization, and consolidation.
- e. Preparation for continuing the attack.

Related individual training will be integrated whenever practical.

3. The conduct of the exercise will be limited to 3 hours for each rifle platoon.

4. The HITCHCOCK RANGE area is reserved for the exercise. Firing limitations are outlined in post range regulations.

5. Ammunition available for each exercise—

<i>Type</i>	<i>Amount</i>
7.62-mm.....	1520 rds
7.62-mm (tracer).....	48 rds
7.62-mm (blank) (belted).....	1000 rds
Hand grenade simulators.....	20 ea
Smoke streamers, green.....	2 ea
Smoke grenades, red.....	3 ea
Electric blasting caps.....	25 ea
TNT.....	10 lbs

6. Direct coordination with unit or special staff members is authorized.

1 Incl
Hitchcock Range
Exercise Area Map
(omitted)

/s/John H. Warner
JOHN H. WARNER
Lt Col, Infantry
Commanding

Example 2. FIELD EXERCISE FOR A RIFLE PLATOON IN THE ATTACK

SCENARIO

1. GENERAL SITUATION.

"Your Company has been advancing to the southeast along EIGHTH DIVISION Road against light enemy resistance. The point and the advance party have reached a location about 250 meters southeast of the RJ EIGHTH DIVISION-HOURGLASS Roads, where they were pinned down by fire from an Aggressor force located on BARDMAN Hill. Your platoon, the leading platoon of the company, is located here at Point C, approximately 350 meters northwest of RJ EIGHTH DIVISION-HOURGLASS Roads. Your platoon leader has been called forward by the company commander."

Note. The general situation is issued to all members of the platoon. Upon issuance of the general situation, the problem becomes tactical. It is normally issued in the assembly area immediately after arrival of the platoon, using a map or sketch of the area as required.

2. INITIAL SITUATION.

When the platoon arrives in the assembly area the chief umpire, acting as the company commander, will take the platoon leader to Point X and issue the following attack order:

"You are now 50 meters west of the RJ EIGHTH DIVISION-HOURGLASS Roads. That direction (pointing) is north. That ridge running across our front at a range of 500 meters is HITCHCOCK SPUR. As you can see, it is part of BARDMAN Hill which you can see to the right front at a range of about 1000 meters.

"An estimated Aggressor squad occupies positions on BARDMAN Hill. The squad still has its machine gun.

"There is no change in the friendly situation.

"We will attack and seize BARDMAN Hill

"The 2d Platoon will attack BARDMAN Hill. 1st Platoon supports the attack from present positions. 3d Platoon be prepared to support the attack on order.

"2d Platoon, attack and seize BARDMAN Hill. Be prepared to resume the advance on order.

"1st Platoon with AT squads attached support the 2d platoon from present positions.

"Weapons Platoon. Mortars in general support from positions in vicinity of VICTORY Pond. Initial targets are Aggressor positions on BARDMAN Hill.

"AT Squads attached 1st Platoon.

"3d Platoon assemble in draw west of EIGHTH DIVISION Road 300 meters from RJ. Be prepared to assist in the attack on order.

"LD is HOURGLASS Road. Time of attack is

"Co ASP on EIGHTH DIVISION Road at deserted mine southeast of VICTORY Pond. Route of evacuation is EIGHTH DIVISION Road.

"Signal to shift support fire is a green smoke streamer. I will be with the 2d Platoon.

"Time is now"

FIRST REQUIREMENT.

Actions and orders of leaders. Movement across the line of departure.

3. SUBSEQUENT SITUATIONS.

SECOND SITUATION.

The platoon moves across the line of departure. As it reaches the vicinity of area 2, it is hit with enemy mortar fire. Umpires fire simulated hand grenades in the vicinity of the platoon to indicate this fire.

SECOND REQUIREMENT.

Actions and orders of leaders. Reaction of the platoon to mortar fire. Change or maintenance of formations.

THIRD SITUATION.

The platoon passes through the enemy mortar fire. As the lead element reaches the vicinity of area B, it comes under fire from BARDMAN Hill. Automatic small arms and rifle fire are indicated by the target detail firing simulator devices located on BARDMAN Hill. Silhouette targets representing approximately an enemy squad are displayed in the vicinity of Point 1. A surprise target of two silhouettes in the same area is used to represent the automatic weapon and is shown intermittently for 1-minute periods.

THIRD REQUIREMENT.

Action of the security element. Actions and orders of leaders. Fire and maneuver of the platoon.

FOURTH SITUATION.

After the platoon has reached a suitable assault position in the vicinity of area A and the assault is launched, enemy fire from BARDMAN Hill becomes weak and sporadic. The amount of fire is controlled by the chief umpire by radio.

FOURTH REQUIREMENT.

Actions and orders of leaders. Conduct of the assault.

FIFTH SITUATION.

BARDMAN Hill is captured.

FIFTH REQUIREMENT.

Actions and orders of leaders. Actions of the platoon during reorganization and consolidation. Preparation for continuing the attack.

4. TIME SCHEDULE.

- a. Troop orientation and issuance of company and platoon orders in initial situation—60 minutes.
- b. Second situation—10 minutes.
- c. Third situation—20 minutes.
- d. Fourth situation—20 minutes.
- e. Fifth situation—20 minutes.
- f. Critique—30 minutes.
- g. Total—2 hours and 40 minutes.

Example 3. CONTROL PLAN FOR RIFLE PLATOON FIELD EXERCISE

1. UMPIRES

- a. *Number:* 2 officers (1 chief umpire, 1 asst. chief umpire) and 4 NCO's (squad umpires).
- b. *Uniform and identification:* Fatigues; steel helmet; white shoulder loop on the left under arm and over shoulder.
- c. *Equipment:*
 - (1) Radio.
 - (2) Umpire checklist.
 - (3) Pencil.
 - (4) 1 red smoke grenade.
 - (5) 5 simulated hand grenades.
- d. *Duties:*
 - (1) General Instructions.
 - (a) Umpires will be familiar with paragraphs 122 and 123, this manual.
 - (b) Casualties will not be declared.
 - (c) Remain as tactical as practicable.
 - (2) Chief Umpire.
 - (a) Normally will be with the platoon leader.
 - (b) Makes all decisions which will affect the advance of the platoon.
 - (c) Orients the platoon leader and issues him the general and initial situations at Point X.
 - (d) Collects the umpire checklist and conducts the critique at Point 1.

- (3) Assistant Chief Umpire.
 - (a) Orients the platoon and explains the general situation.
 - (b) Performs other duties assigned by the chief umpire.
- (4) Squad Umpires.
 - (a) Each places himself to best observe the actions of the squad and records observations on the umpire checklist.
 - (b) New situations will not be injected unless approved by the chief umpire.

2. SAFETY PERSONNEL

a. *Responsibility.*

- (1) The chief umpire and the platoon leader will have overall responsibility for safety. The assistant chief umpire is chief safety officer.
- (2) Squad umpires and the squad leaders will be responsible for safety within the squads.
- (3) The NCO in charge of the target detail will be responsible for safety of that detail.

b. *Uniform and Identification.* Same as paragraph 1b.

c. *Duties of the Safety Officer.*

- (1) Insures that the range flag is properly displayed during conduct of the exercise.
- (2) Posts and instructs the road guards.
- (3) Verifies the placement of roadblocks.
- (4) Posts and instructs the aid men.
- (5) Places the target detail in the pits at Point 1 and issues safety instructions.
- (6) Supervises collection of unexpended ammunition and safety inspection prior to the critique.
- (7) Explains safety rules to the platoon at Point A.

d. *Safety Rules.*

- (1) All weapons will be locked until ready to fire.
- (2) Red panels mark safety boundaries.
- (3) Fire will be in a southeasterly direction between the two panels.
- (4) No firing permitted until the line of departure is crossed.
- (5) Upon signal to cease fire, all weapons will be locked or cleared.
- (6) Signal to cease fire will be a red smoke grenade. All umpires have authority to stop the problem in event of accident, injury, or exceptionally dangerous conditions.
- (7) When the signal to cease fire is given, all action will stop and will not resume until ordered by the chief umpire.
- (8) Any injuries will be reported to the nearest umpire. An umpire receiving a report of accident or injury relays that report immediately to the chief umpire. Reports of injury or accident take precedence over all other radio traffic.
- (9) Simulated grenades: Before removing the safety clip, the firer selects the area where the grenade is to be thrown. He verifies that no personnel is within 15 meters of the spot where the grenade is to be thrown and that no one is moving toward that area. The grenade explodes 6 to 10 seconds after it is ignited and with sufficient violence to project sticks and stones through the air with enough force to inflict serious injury on personnel within a radius of 15 meters.

e. *Road Guards.*

- (1) Three enlisted men, located at Points M, N, and O.
- (2) Uniform and identification (same as par. 1b).
- (3) Equipment: Belt, rifle or pistol, canteen, telephone TA-312/PT.
- (4) Duties: Allow only those persons authorized by the chief umpire to enter the exercise area. Direct authorized visitors to Point X and instruct them to remain at Point X until met by an umpire. Notify either the chief umpire or the assistant chief umpire of any visitors entering the area.

3. ENEMY REPRESENTATION (TARGET DETAIL)

a. *NCO and 3 Pvs.*

b. *Uniform and Identification* (same as par. 1b).

c. *Equipment.* Radio Set AN/PRC-10; telephone TA-312/PT; red smoke grenade.

d. *Duties and Conduct.*

- (1) The enemy will be represented by painted silhouette targets showing helmet, face outline, and shoulders. The targets will be placed in camouflaged foxholes. The machinegun will be indicated by emplacement of a mock weapon and grouping of targets to represent the crew.
- (2) The target detail will simulate enemy fire by remotely controlled munitions at the target position. A remotely controlled machinegun emplaced near the mock weapon will indicate machinegun fire.
- (3) The target detail will operate in a plainly marked, covered pit located near the panel on the southwestern slope of BARDMAN Hill. Simulated fire will commence and cease as directed by the chief umpire. Upon termination of each problem and verification that the range is clear, targets will be replaced or repaired, camouflage restored, and remotely controlled firing devices reloaded.

4. COMMUNICATION

a. *Personnel:* Two AN/PRC-10 radio operators, one for the chief umpire and one for the assistant chief umpire.

b. *Uniform and Identification* (same as par. 1b).

c. *Equipment*

Type	Quantity	Use
Radio Set AN/PRC-10-----	3	Chief umpire, assistant chief umpire, target detail.
Radio Set AN/PRC-6-----	8	1 each umpire, target detail, 1 spare.
Telephone Set TA-312/PT-----	8	Located at Points A, B, C, M, N, O, X, and 1.

5. TROOP ORIENTATION

a. *Location.* In the assembly area, vicinity of Point C.

b. *Personnel to Attend.* All members of the platoon and selected umpires.

c. *Time.* Immediately after the platoon arrives in the assembly area.

d. *Personnel to Conduct.* Assistant chief umpire.

e. *Scope.*

- (1) Purpose of the exercise.
- (2) Identifications.
- (3) Safety rules.
- (4) Special instructions.
- (5) General situation.

6. CRITIQUE

a. *Location.* On the objective, vicinity of Point 1.

b. *Personnel To Attend.* All members of the platoon and all umpires except the assistant chief umpire.

c. *Time.* Immediately following the exercise.

d. *Personnel to Conduct.* The chief umpire will conduct the critique, basing his remarks on his own observations and a consolidation of comments made by the assistant umpires on their checklists.

e. *Scope.*

- (1) Review the purpose of the exercise and the situation.
- (2) Plans, actions, and orders of the leaders.
- (3) Actions of security elements.
- (4) Conduct of attack; formations and execution of the assault.

Example 4. TYPICAL UMPIRE CHECKLIST* FOR RIFLE PLATOON FIELD EXERCISE

UNIT: _____ DATE: _____

	<i>Actions</i>	<i>Yes</i>	<i>No</i>	<i>Remarks</i>
1. Initial Situation:				
a.	Did the platoon leader arrange for movement of his unit?	---	---	
b.	Did the platoon leader plan his reconnaissance?	---	---	
c.	Did the platoon leader select a position from which to issue his order?	---	---	
d.	Was his order clear, concise, and timely?	---	---	
e.	Was the platoon leader's plan and initial formation sound?	---	---	
f.	Were the orders of the squad leader clear, concise, and timely?	---	---	
g.	Did the platoon maintain its formation while moving to the LD?	---	---	
h.	Was the security element alert during the initial advance?	---	---	
i.	Did all leaders maintain control? coordination?	---	---	
j.	Were the following promptly carried out—			
	(1) Reconnaissance, formulation of plans, and decisions?	---	---	
	(2) Issuance of orders?	---	---	
2. Second Situation:				
a.	Did the platoon react properly to mortar fire?	---	---	
b.	Did leaders maintain control?	---	---	
c.	Were formations:			
	(1) Changed?	---	---	
	(2) Maintained?	---	---	
	(3) Controlled?	---	---	
3. Third Situation:				
a.	Did the security element react in a positive manner when fired on?	---	---	
	(1) Did the unit move forward aggressively?	---	---	
	(2) Did individuals use cover and concealment?	---	---	
	(3) Did squad leaders control volume of fire returned?	---	---	
b.	Did the platoon leader:			
	(1) Move unit to cover?	---	---	
	(2) Make a reconnaissance?	---	---	
c.	Was the platoon leader's order clear, concise, and timely?	---	---	
d.	Did the platoon leader's plan of attack include:			
	(1) A base of fire?	---	---	
	(2) A maneuver element?	---	---	
	(3) Coordination measures?	---	---	
e.	Were the orders of the squad leaders clear, concise, and timely?	---	---	
f.	Did the base of fire:			
	(1) Use cover and concealment?	---	---	
	(2) Occupy good firing positions?	---	---	
	(3) Engage surprise targets promptly?	---	---	
g.	Did the maneuver element:			
	(1) Use cover and concealment?	---	---	
	(2) Move aggressively and promptly?	---	---	
	(3) Achieve surprise?	---	---	
h.	Did the platoon leader make use of supporting fires?	---	---	
4. Fourth Situation:				
a.	Were the maneuver element and the base of fire coordinated from the beginning of the assault?	---	---	
b.	Was the assault aggressive?	---	---	
c.	Was the fire controlled during the assault?	---	---	
d.	Did leaders have control of their units during the assault?	---	---	
5. Fifth Situation:				
a.	Were the squads effectively located during consolidation?	---	---	
b.	Did the squad leaders check for:			
	(1) Casualties?	---	---	
	(2) Replacement of key individuals?	---	---	
	(3) Ammunition requirements?	---	---	
	(4) Redistribution of ammunition?	---	---	

*The umpire checklist is a guide for the umpires and provides a systematic means of recording observations. It is an elaboration of the requirements in the scenario. A different checklist is required for each exercise to cover each of the requirements.

<i>Actions</i>		<i>Yes</i>	<i>No</i>	<i>Remarks</i>
c.	Did the platoon leader effectively consolidate the position?	---	---	
d.	Did the platoon leader send a message to the company commander on—			
	(1) Platoon situation?	---	---	
	(2) Casualties?	---	---	
	(3) Ammunition requirements?	---	---	
e.	Did the platoon leader prepare to continue the attack or repel counterattack by—			
	(1) Providing security?	---	---	
	(2) Completing consolidation?	---	---	

Example 5. TYPICAL BATTALION TRAINING MEMORANDUM

HEADQUARTERS 1ST BATTALION, 70TH INFANTRY Fort Benning, Georgia

TRAINING MEMORANDUM }
No. 5

1 November 19__

RIFLE PLATOON FIELD EXERCISE

1. *References.*

- a. FM 7-15, paragraphs 25-38.
- b. FM 105-5, paragraphs 122-123.
- c. AR 385-63.
- d. Post range and safety regulations.

2. *Purpose.*

The purpose of this exercise is to train the rifle platoons of the battalion for a daylight attack. This will be a combat firing exercise designed to provide training in the following:

- a. Initial and subsequent orders of troop leaders.
- b. Combat formations.
- c. Fire and maneuver.
- d. Conduct of an assault.
- e. Reorganization and consolidation.
- f. Preparation for continuing the attack.

3. *Schedule.*

- a. 6 Nov—1st Platoon, Co A—rehearsal unit.
- b. 10 Nov—1st and 2d Platoons, Co A.
- c. 11 Nov—3d Platoon, Co A and 1st Platoon, Co B.
- d. 12 Nov—2d and 3d Platoons, Co B.
- e. 13 Nov—1st and 2d Platoons, Co C.
- f. 14 Nov—3d Platoon, Co C.

4. *Troop Orientation.*

The platoons will be oriented in the exercise area by the umpires immediately after arrival in the exercise area. The orientation will cover the purpose of the exercise, safety instructions, identification of control personnel, special instructions for conduct of the exercise, and the general situation.

5. *Control Personnel.*

- a. The chief umpire and safety officer will be Captain Daniel O. Brown, Company A.

b. Additional personnel will be furnished by each company as follows—

- (1) Co A—two radio operators, AN/PRC-10.
- (2) Co B—one officer, assistant chief umpire, one NCO, and three privates for target detail.
- (3) Co C—two NCO's, assistant umpires, and three privates for work detail.
- (4) Hq Co—one NCO, assistant umpire, and three privates for road guards.

c. Requirements:

- (1) Names of the above personnel will be furnished the battalion S3 no later than 030900 Nov.
- (2) Control personnel and work detail will report to Captain Brown at Company A orderly room, 050800 Nov, for initial briefing and instructions. All control personnel will be available, on call, to Captain Brown for the period 1-19 Nov, inclusive.
- (3) Rehearsal unit: The 1st Platoon, Co A, is available to the chief umpire on 6 November.

6. *Administrative Details.*

a. *Time and Place for Participating Units to Report.*

- (1) One exercise will begin at 0805 and another at 1305 each day. Companies will have one platoon at the detrucking point at 0800 and another at 1300 on the day scheduled.
- (2) The detrucking point is on EIGHTH DIVISION Road, 400 meters northwest of RJ EIGHTH DIVISION and HOURGLASS Roads.

b. *Route.* FIRST DIVISION Road—EIGHTH DIVISION Road.

c. *Uniform and Equipment.* Fatigues, steel helmet, combat pack, and platoon combat equipment.

d. *Transportation.* The battalion motor officer will make available to the chief umpire the following transportation—

- (1) Two 2½-ton trucks, one ¾-ton truck, and two ¼-ton trucks for control personnel and equipment.
- (2) Three 2½-ton trucks to transport the platoons to exercise area.

e. *Equipment and Supplies.*

- (1) The battalion S4 will provide the following items to the chief umpire by 041000 Nov:

- 13 white shoulder loops
- 1 MG, 7.62-mm w/blank attachment
- 6 disappearing E and F targets
- 18 E-silhouette targets
- 36 F-silhouette targets
- 4 roadblocks
- 2 shovels
- 2 picks
- 2 axes
- 2 hammers
- 1 crosscut saw
- 2 pounds assorted nails
- 2 batteries BA-279/U

- (2) The battalion S4 will provide the following ammunition for each platoon to the chief umpire by 1630 hours on the day prior to the problem:

- 1520 rounds rifle, 7.62-mm
- 48 rounds rifle, 7.62-mm
- 1 linked belt, 1000 rounds 7.62-mm (blank)
- 20 simulated hand grenades
- 2 green smoke streamers
- 3 red smoke grenades
- 25 electric blasting caps
- 10 pounds TNT

(3) The battalion communication officer will provide the following equipment to the chief umpire by 050900 Nov:

3 radio sets, AN/PRC-10

8 radio sets, AN/PRC-6

8 telephone sets, TA-312/PT

1 mile telephone wire

f. *Evacuation.* The battalion surgeon will provide one truck ambulance and one aid man to the chief umpire at the detrucking point prior to the starting time for each exercise. The aid man will be equipped with a field medical kit. Evacuation will be via EIGHTH DIVISION and FIRST DIVISION Roads to Station Hospital.

FOR THE COMMANDER:

/s/Charles M. Millman

CHARLES M. MILLMAN

Capt, Infantry

Adjutant

APPENDIX III

DOCUMENTS RELATED TO THE LARGE UNIT TACTICAL EXERCISE

Example 1. TYPICAL DIRECTIVE FOR DIVISION FIELD EXERCISE

HEADQUARTERS, 20TH INFANTRY DIVISION

Fort Leavenworth, Kansas
Office of the Commanding General

14 May 19__

SUBJECT: Division Field Exercise.

TO: Brigadier General James E. Hays
Assistant Division Commander

1. The division will conduct a three-day controlled field exercise during the period 16-18 June 19___. You will direct the planning and preparation for the exercise and act as the chief umpire/controller. The division will be portrayed as part of a four-division corps in an active nuclear situation.

2. The purpose of the exercise is—

a. To provide training in—

- (1) Occupation of assembly areas during darkness.
- (2) Advance to contact.
- (3) Execution of a coordinated attack.
- (4) Penetration of an enemy position and exploitation.
- (5) Combat service support.
- (6) Preparation of estimates, plans, and orders by commanders and staffs.

b. To test and evaluate service test models of the portable radio set AN/PRC-() in three rifle companies. See inclosure one for details. (Omitted)

3. Other information is as follows—

a. The exercise director staff will consist of the G1, G2, G3, G4, and signal officer. Representatives of the special staff and support command will be provided as required.

b. The terrain to be used is shown on the attached map. Movement of troops out of the exercise area is prohibited for the duration of the exercise. Movement to and from the area will be organic transportation.

c. The entire division will participate in the exercise except for those persons required for safety and protection of the garrison area.

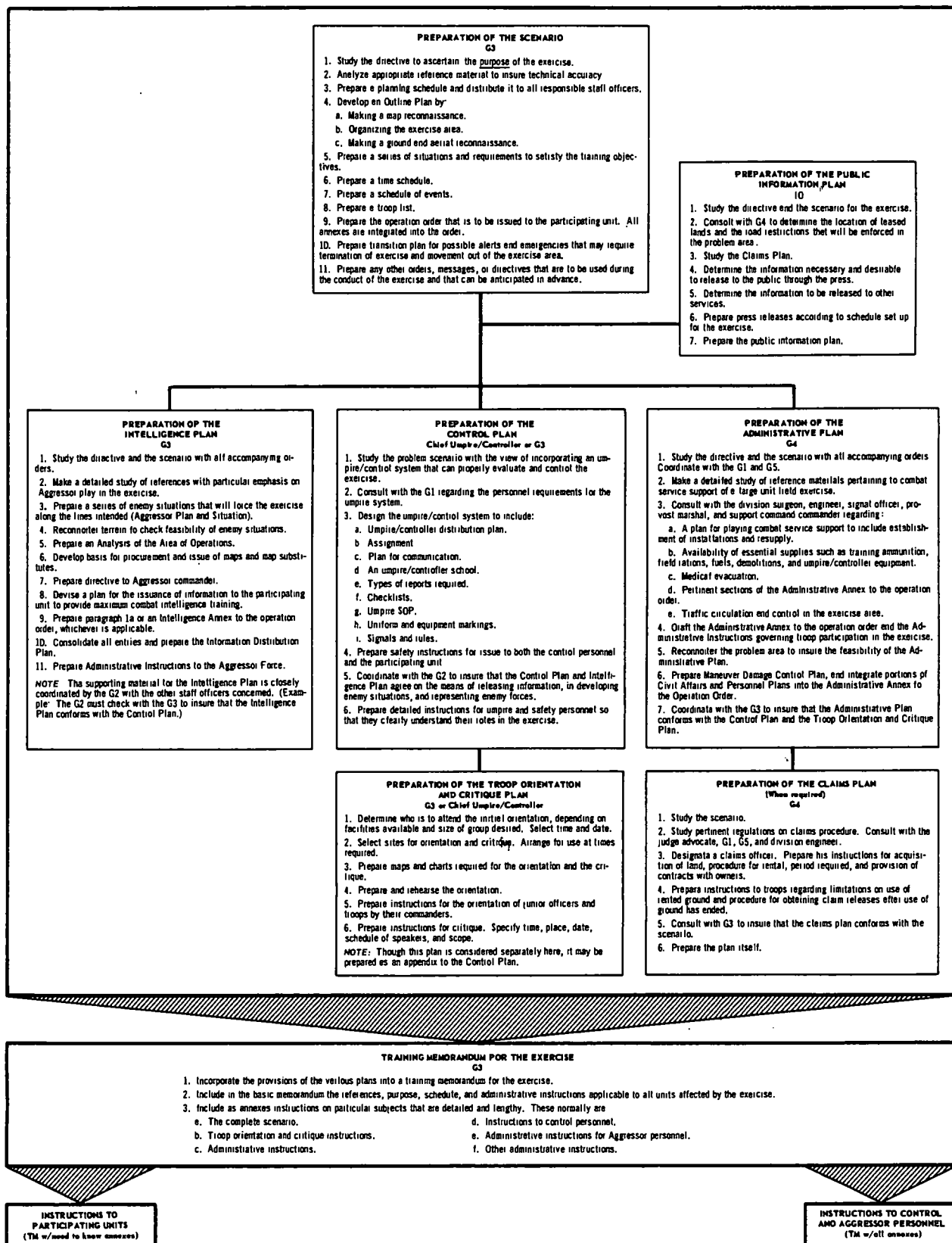
d. Sufficient field exercise funds are available to support the exercise (AR 220-55).

e. The necessary umpire personnel, vehicles, drivers, and umpire communication support will be provided by the 17th Infantry Division. An early report of the specific requirements should be made to the Commanding General, 17th Infantry Division, for their planning.

f. A brigade of one tank and two infantry battalions will be furnished by the 17th Infantry Division to act as the Aggressor force. This brigade will be attached to the 20th Infantry Division from 151200 June 181200 June for the conduct of the exercise. Plans for the preparation and rehearsal of the Aggressor force prior to the exercise will require coordination with the Commanding General, 17th Infantry Division.

g. All classes of supply will be physically played as far as practicable. Class V play will be accomplished by the use of sand-filled boxes and blank ammunition.

/s/John M. Vance
JOHN M. VANCE
Major General, USA
Commanding



Example 2. Director staff activities in preparing exercise plans.

Example 3. SEQUENTIAL PLANNING AND PREPARATION FOR THE LARGE UNIT FIELD EXERCISE.

1. Preparation and issue of the directive. (By higher headquarters or the unit commander.)
2. Study of reference material and issue of planning guidance. (By exercise staff and director.)
3. Preparation of the planning schedule. (G3)
4. Development and approval of the outline plan. (G3, G2, and exercise director.)
5. Issue of warning orders. (Exercise director.)
6. Preparation of the scenario. (G3)
7. Preparation of the major supporting plans. (Entire staff.)
8. Preparation and issue of the training memorandum. (G3 and director.)
9. Procurement of additional personnel, supplies, and equipment. (G1 and G4.)
10. Preparatory training conducted by—
 - a. Units to participate.
 - b. Director headquarters, controllers, and umpires.
 - c. Aggressor force.
11. Accomplishment of support missions—
 - a. Acquisition of terrain.
 - b. Schooling of umpires and controllers.
 - c. Preparation of exercise area by Aggressor force and technical teams.
 - d. Press release to the public.
12. Orientation of player personnel. (By exercise director and staff.)
13. Conduct of the exercise. (By chief umpire/controller.)
14. Supervision of the exercise by—
 - a. Director headquarters.
 - b. Unit commander or higher headquarters.
15. Critique of exercise. (By exercise director and selected umpires.)
16. Unit critiques. (By respective unit commanders.)
17. Submission of after-action reports. (By exercise director.)

Example 4. DEVELOPMENT OF PLANNING SCHEDULE BY PROCESS OF BACKWARD PLANNING.

Date of exercise: 16–18 June 19__.

Date directive received: 15 May 19__.

Period available for planning and preparation: 14 May—15 June 19__ (32 days).

<i>Events and tasks (and time required)</i>	<i>Starting dates (1st approximation)</i>	<i>Completion dates (refined)</i>
1. Conduct of exercise (3 days).....	16 June	18 June
2. Final preparation and unit movement (5–7 days).....	9 June	15 June
3. Player orientation (1 day).....	8 June	10 June
4. Accomplish support missions. ¹ (7–10 days).....	29 May	6 June
5. Preparatory training ^{1 2} (7–14 days).....	25 May	9 June
6. Process incoming personnel and equipment (1 day).....	24 May	27 May
7. Publish unit training memorandum (0–1 day).....	23 May	26 May
8. Prepare supporting plans and training memorandum (4–5 days).....	18 May	26 May
9. Prepare scenario (2 days).....	16 May	22 May
10. Approval of outline plan; warning order issued ³ (1 day).....	15 May	20 May
11. Develop outline plan (2 days).....	13 May	19 May
12. Prepare planning schedule (1 day).....	12 May	17 May
13. Research and study of reference material (2 days).....	10 May	16 May
14. Receipt of directive.....	10 May	14 May

¹ Concurrent activities.

² Training and rehearsals by players, umpire/controllers, and Aggressor force.

³ Permits maximum planning, preparation, and training by players, umpire/controllers, and Aggressor force.

Example 5. DISTRIBUTION OF PLANS FOR COMMAND POST AND FIELD EXERCISES

Item	Prepared by	Director group	Distribution		Player units
			Umpires	Aggressor ¹	
Training Memo	G3	✓	✓	✓	✓
Annex A, Scenario	G3	✓	✓	✓	
General Situation ³	G3	✓	✓	✓	✓
App 1, Initial and Subsequent Situations	G3	✓	✓	✓	
App 2, Situation Overlay	G3	✓	✓	✓	
App 3, Corps OPORD (Extracts)	G3	✓	✓	✓	✓
Tab A, Intel Annex to Corps OPORD	G2	✓	✓	✓	✓
Tab B, Opn Overlay to Corps OPORD	G3	✓	✓	✓	✓
App 4, Plan for Intelligence	G2	✓	✓	✓	
Tab A, Information Distribution Plan	G2	✓	✓	✓	
Tab B, Aggressor Plan and Situation	G2	✓	✓	✓	
Tab C, Directive to Aggressor Commander ²	G2	✓	✓	✓	
Tab D, Gen Instructions for Aggressor ²	G2	✓	✓	✓	
App 5, Schedule of Events	G3	✓	✓	✓	
Annex B, Control Plan	G3, chief umpire/ controller.	✓	✓	✓	
App 1, Umpire Assignments	G1, chief umpire/ controller.	✓	✓		
App 2, Schedule of Umpire Orientation and Tng.	G3, chief umpire/ controller.	✓	✓		
App 3, Umpire Checklist	G3, chief umpire/ controller.	✓	✓		
App 4, Umpire Communication Plan	Chief umpire/controller, Div Sig Off	✓	✓		
Annex C, Orientation and Critique Plan	G3, chief umpire/ controller.	✓	✓	✓	✓
Annex D, Plan for Administration	G1, G4	✓	✓	✓	✓
App 1, Army ADMINO (Extracts)	G1, G4	✓	✓	✓	✓
App 2, Claims Plan ⁴	G4, Claims Off	✓	(Primary interest; claims off)		
Annex E, Public Information Plan ²	G1, PIO	✓	✓	✓	✓

¹ For controlled field exercise.

² For field exercise only.

³ May be made an annex to the training memorandum to facilitate advance issue.

⁴ Since an administrative plan is not usually issued in a CPX, the claims plan then becomes an annex to the training memorandum.

Example 6. CONCURRENT PLANNING AND PREPARATION FOR THE LARGE UNIT FIELD EXERCISE

Time schedule	Army headquarters	Corps		Division	
		Player	Control	Player	Control and umpire
E-120	Publish exercise directive. Organize exercise planning staff and exercise support staff (minimum manning).				
E-110	Publish warning orders...	Publish exercise directive. Organize exercise planning staffs.	—Designate personnel —Man sufficiently to begin planning		

Time schedule	Army headquarters	Corps		Division	
		Player	Control	Player	Control and umpire
E-100	Conduct exercise planning conference. Coordinate control details and allocation of resources.	<i>PLAYER</i> Issue warning orders.	<i>CONTROL</i>	<i>PLAYER</i>	<i>CONTROL</i>
E-90	Complete preparation of annexes to training memorandum.	-----	-----	Issue warning orders.	
E-85	Publish training memorandum (less movement plan).	Publish training memorandum.			
E-80	-----	Publish player plan.	Publish control plan.	Publish training memorandum. Publish player plan.	
E-75	-----	-----	-----		Publish control plan.
E-60—E-50	Conduct exercise planning conference—war game player plans.				
E-50	Publish final exercise movement plans (administrative move).				
E-45 to E-30	Conduct control war game.	-----	Conduct control war game. Report results to army.	-----	Conduct control war game. Report results to corps.
E-30	Begin installation of communication system in exercise area.	Begin specific exercise orientation of all participants.			
E-25	Briefing and orientation of all personnel. Begin intelligence preplay.				
E-20	Publish final changes to control plan based on control war game.	-----	Implement final changes to control plan.—all supervise.	-----	Implement final changes to control plan.
E-14	Begin and supervise major moves to exercise area.	Players move to exercise area			
E-10	Fully augment control and support staffs.				
E-7—E-4	Conduct umpire school, including umpire tactical rides.	-----	-----	Close into exercise area. Conduct reconnaissance, tactical rides, test communication system.	
E-3	Conduct control CPX until E-day.	-----	Control CPX	-----	Control CPX.
E-Day—E+7	Conduct and support exercise.	Participation	Control	Participation	Control.
T-Day Exercise Terminates.	Exercise director terminates exercise.	-----	-----	Furnish recommendations for critique.	Furnish recommendations for critique.
T+1	Conduct critique	Attend critique—participate. (Selected personnel)	Attend critique—participate. (Selected personnel)	Attend critique. (Selected Personnel)	Attend critique. (Selected Personnel)

Time schedule	Army headquarters	Corps		Division	
		Player	Control	Player	Control and umpire
T+2	Supervise return to home station of participating units, maneuver damage repair, processing of claims, dismantling of communication system; prepare final report; reduce staff to planning level. Submit final report to exercise director for approval; publish; disseminate; follow-up schedule for staff.				
T+10					
T+14					

APPENDIX IV

WAR GAME TECHNIQUES

Part One. GENERAL

1. Purpose

This appendix provides guidance for a simplified method of war gaming division-sized actions. The simplification applied in this appendix reduces many combat variables to a numerical value and integrates these values into graphical and tabular forms. These graphs and tables take the place of more complicated and more expensive computers and are more applicable to field use. The primary use of this appendix is in map maneuvers as discussed in chapter 5, but the methods apply equally to the war gaming of any plans.

2. Method

The data and procedures herein have been designed to war game combat between two player divisions. Aggressor data may be used if one force is using Aggressor organization, equipment, and tactics. The organization and duties of the war gaming section that will apply the war gaming procedures are described in chapter 6. The map maneuver outlined in chapter 5 will not necessarily employ Part Four, Intelligence, and Part Seven, Tank Play, described in this appendix but these parts are included for completeness.

Table I. Preparatory tasks.

Step	Responsible activity	Item	Reference
1	Player	Prepare initial estimates of the situation (mental).	
2	Player	Submit plans, overlays, task organizations, and sequences of	

Step	Responsible activity	Item	Reference
3	Control	predicted events for the initial deployment of forces based on mission assigned. Transmit initial intelligence to player teams, including time at which information is known.	Part Four, Intelligence.
4	Player	Review initial deployments, orders, and task organizations, in view of intelligence, and propose changes if indicated.	
5	Control	Adjust initial intelligence furnished respective player teams if there are major changes in dispositions.	See 3 above.
6	Player	Submit fire support plans for preparation and counterpreparation if situation warrants.	Part Five, Movements and Force Ratios; Part Six, Casualty Assessment. See 6 above.
7	Control	Assess effects of preparatory and counterpreparatory fire.	

The chief controller determines the length of exercise time periods based on the occurrence of critical actions between the two forces. The table below shows the actions to be taken during exercise time periods.

Table II. Tasks for one time period during exercise.

Step	Responsible activity	Task	Exercise time	Reference
1	Control.....	Notify the player teams of the location of the forward edge of the battle area at the beginning of the period.	Beginning of period.	Part Five, Movements and Force Ratios.
2	Control.....	Submit contact intelligence to player teams at the beginning of the period.	Beginning of period.	Part Four, Intelligence.
3	Player.....	Notify control of projected actions for the period.....	Beginning of period.	Part Three, Timelags.
4	Control.....	Furnish intelligence to the player teams periodically throughout the period as professional judgment indicates.	Throughout period.	Part Four, Intelligence.
5	Control.....	Notify player teams of movements accomplished and losses (personnel and materiel) sustained during the period.	End of period...	Part Five, Movements and Force Ratios; Part Six, Casualty Assessment; Part Seven, Tank Play.
6	Control.....	Recalculate and notify player teams of new force ratios and effectiveness of units.	End of period...	Part Five, Movements and Force Ratios.

Part Two. PROBABILITIES, RANDOM NUMBERS

3. General

War gaming relies on the use of probabilities in implementing many of its control procedures. This part outlines the way probabilities are used without attempting to explain the mathematical basis or method of derivation.

4. How Expressed

The value of any probability is never greater than unity. A probability of ONE means any event having this probability will always occur. A probability of ZERO means an event will never occur. If an event occurs a given percentage of times on the average, the probability of occurrence equals the percentage.

5. How Applied

Probabilities are primarily used in war gaming to determine whether an event will occur. A random number table (table III) is used to facilitate the use of probabilities. To use it, enter the table at any starting point, for example, column 23, row 37. The number encountered is 46. Do not enter the table at the same place, or near the same place, the next time it is used. The desired random numbers are taken in order from this starting point in any direction, i.e., up, down, right, or left. When the end of a row or column is reached without having the required amount of random numbers, proceed to the next column or row, in order, until the desired amount of random numbers has been

obtained. In the attached table of random numbers, 00 should be read as 100 since the numbering starts with 1 instead of 0. Examples for using the random number table follow.

a. Example 1. If 10 percent of all aircraft dispatched are detected in flight by radar, each aircraft dispatched has a 0.1 probability of being detected. If 12 aircraft are dispatched, select the first 12 random numbers encountered in the table and assign them in order to the 12 aircraft. All aircraft assigned a number of 10 or less are considered detected. If the detection probability had been 0.8, all aircraft with assigned random numbers of 80 or less would have been detected.

b. Example 2. If a guided missile has a probability of 0.6 of being shot down, the random number table is entered at a random place. If the number obtained at the point of entry is 60 or less, the missile is considered shot down. Any number above 60 indicates the missile is not shot down.

c. Example 3. If it is desired to select an exact 30 percent of a group of 10 tanks and determine which tanks are selected, each tank is assigned a number from 1 through 10. Random numbers are then taken from the table until exactly 3 different numbers of 10 or less are selected. These three numbers point out the selected tanks. It may be necessary to choose more than 10 random numbers before 3 numbers less than 10 are encountered.

Table III. Random numbers.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	22	17	68	65	84	68	95	23	92	35	87	02	22	57	51	61	09	43	95	06	58	24	82	03	47
2	19	36	27	59	46	13	79	93	37	55	39	77	32	77	09	85	52	05	30	62	47	83	51	62	74
3	16	77	23	02	77	09	61	87	25	21	28	06	24	25	93	16	71	13	59	78	23	05	30	16	25
4	78	43	76	71	61	20	44	90	32	64	97	67	63	99	61	46	38	03	93	22	69	81	21	99	21
5	03	28	28	26	08	73	37	32	04	05	69	30	16	09	05	88	69	58	28	99	35	07	44	75	47
6	93	22	53	64	39	07	10	63	76	35	87	03	04	79	88	08	13	13	85	51	55	34	57	72	69
7	78	76	58	54	74	92	38	70	96	92	52	06	79	79	45	82	63	18	27	44	69	66	92	19	09
8	23	68	35	26	00	99	53	93	61	28	52	70	05	48	34	56	65	05	61	86	90	92	10	70	80
9	15	39	25	70	99	93	86	52	77	65	15	33	59	05	28	22	87	26	07	47	86	96	98	29	06
10	58	71	96	30	24	18	46	23	34	27	85	13	99	24	44	49	18	09	79	49	74	16	32	23	02
11	57	35	27	33	72	24	53	63	94	09	41	10	76	47	91	44	04	95	49	66	39	60	04	59	81
12	48	50	86	54	48	22	06	34	72	52	82	21	15	65	20	33	29	94	71	11	15	91	29	12	03
13	61	96	48	95	03	07	16	39	33	66	98	56	10	56	79	77	21	30	27	12	90	49	22	23	62
14	36	93	89	41	26	29	70	83	63	51	99	74	20	52	36	87	09	41	15	09	98	60	16	03	03
15	18	87	00	42	31	57	90	12	02	07	23	47	37	17	31	54	08	01	88	63	39	41	88	92	10
16	88	56	53	27	59	33	35	72	67	47	77	34	55	45	70	08	18	27	38	90	16	95	86	70	75
17	09	72	95	84	29	49	41	31	06	70	42	38	06	45	18	64	84	73	31	65	52	53	37	97	15
18	12	96	88	17	31	65	19	69	02	83	60	75	86	90	68	24	64	19	35	51	56	61	87	39	12
19	85	94	57	24	16	92	09	84	38	76	22	00	27	69	85	29	81	94	78	70	21	94	47	90	12
20	38	64	43	59	98	98	77	87	68	07	91	51	67	62	44	40	98	05	93	78	23	32	65	41	18
21	53	44	09	42	72	00	41	86	79	79	68	47	22	00	28	35	55	31	51	51	00	83	63	22	55
22	40	76	66	26	84	57	99	99	90	37	36	63	32	08	58	37	40	13	68	97	87	64	81	07	83
23	02	17	79	18	05	12	59	52	57	02	22	07	90	47	03	28	14	11	30	79	20	69	22	40	98
24	95	18	82	06	53	31	51	10	96	46	92	06	88	07	77	56	11	50	81	69	40	23	72	51	39
25	35	76	22	42	92	96	11	83	44	80	34	68	35	48	77	33	42	40	90	60	73	96	53	97	86
26	26	29	13	56	41	85	47	04	66	08	34	72	57	59	13	82	43	80	46	15	38	26	61	70	04
27	77	80	20	75	82	72	82	32	99	90	63	95	73	76	63	89	73	44	99	05	48	67	26	43	18
28	46	40	66	44	52	91	36	74	43	53	30	82	13	54	00	78	45	63	98	35	55	03	36	76	68
29	37	56	08	18	09	77	53	84	46	47	31	91	18	95	58	24	16	74	11	53	44	10	13	85	57
30	61	65	61	68	66	37	27	47	39	19	84	83	70	07	48	53	21	40	06	71	95	06	79	88	54
31	93	43	69	64	07	37	18	04	52	35	56	27	09	24	86	61	85	53	83	45	19	90	70	99	00
32	21	96	60	12	99	11	20	99	45	18	48	13	93	55	34	18	37	79	49	90	65	97	38	20	46
33	95	20	37	97	97	27	37	83	28	71	00	06	41	41	74	45	89	09	39	84	51	67	11	52	49
34	97	86	21	78	73	10	65	81	92	59	58	76	17	14	97	04	76	62	16	17	17	95	70	45	80
35	69	92	06	34	13	59	71	74	17	32	27	55	10	24	19	23	71	82	13	74	63	52	52	01	41
36	04	31	17	21	56	33	73	99	10	87	26	72	39	27	67	53	77	57	68	93	60	61	97	22	61
37	61	06	98	03	91	87	14	77	43	96	43	00	65	98	50	45	60	33	01	07	98	99	46	50	47
38	85	93	85	86	88	72	87	08	62	40	16	06	10	89	20	23	21	34	74	97	76	38	03	29	63
39	21	74	32	47	45	73	96	07	94	52	09	65	90	77	47	25	76	16	19	33	53	05	70	53	30
40	15	69	53	82	80	79	96	23	53	10	65	39	07	16	29	45	33	02	43	70	02	87	40	41	45
41	02	89	08	04	49	20	21	14	68	86	87	63	93	95	17	11	29	01	95	80	35	14	97	35	33
42	87	18	15	89	79	85	43	01	72	73	08	61	74	51	69	89	74	39	82	15	94	51	33	41	67
43	98	83	71	94	22	59	97	50	90	52	08	52	85	08	40	87	80	61	65	31	91	51	80	32	44
44	10	08	58	21	66	72	68	49	99	31	89	85	84	46	06	59	73	19	85	23	65	09	29	75	63
45	47	90	56	10	08	88	02	84	27	83	42	29	72	23	19	66	56	45	65	79	20	71	53	20	25

Part Three. TIME LAGS

6. General

a. Time lags in the processing of information are assessed in accordance with the guides listed below. The following time lags in the delay, coordination, and control of tactical elements are used:

- (1) Staffing and reaction time—the total elapsed time from the instant that information is received at any echelon or headquarters until the start of transmission of reaction information to another activity or echelon. The total time required for evaluation, interpretation, and necessary staff coordination is included in this figure.
- (2) Nuclear delivery time—the total time required for weapon assembly, checkout, and warning of friendly troops and aircraft.

b. When two or more headquarters must react *in succession* before a specific action can begin, the total time lag is the sum of the reaction times of each headquarters. When concurrent staff action can be assumed, the largest staffing and reaction time is used.

7. Staff and Commander Reaction Times

These time factors are averages for headquarters during the course of standard operations.

Table IV. Staff and commander reaction times.

Headquarters activities	Headquarters reaction time in minutes
Within a Company HQ.....	5
Within a battalion HQ.....	10

Table IV. Staff commander reaction times—Continued

Headquarters activities	Headquarters reaction time in minutes
Within a brigade or regimental HQ.....	30
Within a division HQ.....	60
Within a corps HQ.....	60
Within a field army HQ.....	90

8. Nuclear Delivery System Response Times

These times are from the time of decision to deliver a weapon (by the commander possessing that authority) until the weapon is detonated in the target area. To determine the total time lag for nuclear weapon delivery, the appropriate staffing and reaction times shown in table IV are added to system response times.

Table V. Nuclear delivery response times (on-call targets).

Delivery system	Response time in minutes
Short-range cannon.....	3
Medium-range cannon.....	3
Long-range cannon.....	5
Small free rocket.....	5
Large free rocket.....	5
Light guided missile.....	10
Medium guided missile.....	20
Heavy guided missile.....	30
Fighter aircraft.....	10
Tactical bomber.....	20

Part Four. INTELLIGENCE

9. General

a. The following general procedures apply to intelligence play:

- (1) Normally, only accurate qualitative intelligence is furnished. This is not to imply that a complete intelligence picture or precise locations are always furnished. An intelligence location error may be injected in the play as desired.
- (2) Specific sources of information and methods of collection are not considered. It is assumed that the intelligence furnished is the product of an integrated intelligence system.

b. Two major subdivisions of intelligence are played: pregame intelligence and intelligence during the game. Fundamentally, however, all intelligence is based on a determination of the percentage of the opposing force situations known to the respective opposing commanders. This percentage is applied only to those units and installations portrayed on the operation map.

- (1) Pregame intelligence is that which is given each side prior to the start of the actual play of the game. It is determined by means of zones of intelligence in which various levels of intelligence can be expected.

- (2) Intelligence during the game is given each side throughout the play of the game as part of a continuing intelligence estimate. The control group feeds this intelligence to each side in accordance with appropriate time lags and the capabilities assumed for each side. Written or oral spot summaries of all or portions of the battle may be used. In addition, periodic intelligence summaries are furnished each side, especially in regard to units in contact. The use of overlays is recommended.

c. To facilitate the determination of the percentage levels of quantitative intelligence, the areas in which the opposing forces are deployed are each divided into three zones. Zone I is the zone wherein patrol action and ground observation are possible. Zone II is the area in which major reliance is placed on ground electronic sensory devices, long-range patrols, and aerial reconnaissance. Zone III is the area in which the primary sources of information are aerial reconnaissance, long-range patrols, long-range sensory devices, communication-electronics intercept, and guerrilla activities. The depth of Zone I varies depending on the terrain, troop deployments, and the nature of combat. Generally, Zone I will vary in depth from 2,000 to 5,000 meters. The depth of Zone II is also variable depending on the characteristics of sensory devices in addition to the factors which affect the depth on Zone I. Generally, Zone II will vary in depth from the rear of Zone I to a maximum of 10,000 meters. Zone III will extend from the rear of Zone II to the distance of the commander's area of interest.

d. The probability method is used to determine the distribution of intelligence. In this method, each enemy element to be considered (those shown on the operation map) is numbered. Because of size, area covered, and many other characteristics, all elements shown on the operation map cannot be detected by intelligence-gathering means with equal ease. This factor is recognized by allocating more numbers to some elements than to others. Thus, a battalion command post or a rifle company may be allocated one number while an entire battalion may be given three numbers. Professional military opinion is relied on for the numbers allocated.

- (1) In the probability method, the predetermined intelligence level percentage is applied as a probability of detection to each number assigned the enemy elements

being considered. Then, by use of the table of random numbers, it is determined whether some information is available on each numbered element shown on the operation map.

- (2) Having determined which enemy elements are to be reported, professional judgment is used to determine how the elements selected are to be described. This determination may be based on an assumption as to the condition of such factors as cover and concealment, capabilities, dispositions, and recent movements.

e. Certain intelligence that will be passed to each player team once play has commenced requires further amplification.

- (1) Contact intelligence—as units advance and come in direct contact with enemy elements, these enemy elements are identified as to size, estimated strength, and unit. This rarely results in identifying units larger than a battalion. This intelligence is independent of the percentage levels of intelligence discussed above.
- (2) Movement and change intelligence—this type of intelligence refers to that obtained on major troop movements and actions and is furnished on the basis of the probabilities of detection of specific items, modified by professional military judgment as to whether the movements, changes, or activities would be detected. Degrada-tions of detection probabilities based on the use of smoke or exploitation of darkness are based on professional judgment.
- (3) There is no detailed play of air reconnaissance—under this condition, all intelligence sources are lumped together. Players may request intelligence on specific priority targets once play has commenced. Each target is assigned a probability of detection adopted directly from corresponding percentage levels of intelligence discussed above.
- (4) When probabilities are applied to targets, the size, area covered, and other characteristics of each target are considered. If appropriate, targets may be broken down into segments, to each of which the probability of detection is applied. Professional judgment is relied on to determine the proper division of targets into segments.

10. Rules of Play

a. *Pregame Intelligence.* Intelligence prior to the start of actual play is given in the general and special situation and in intelligence summaries and periodic intelligence reports. After submission of plans by the opposing forces, intelligence is passed by the control team based on the rules below. Accurate locations are given for units and activities in zone I. Locations of units and activities in zones II and III may be offset to simulate location errors in accordance with procedures contained in paragraph 18 and table VIII.

b. *Intelligence During the Game.* The following types of intelligence are provided during the play of the game:

- (1) Contact intelligence (par. 9e(1)). Locations are accurate in all cases.
- (2) Movement and change intelligence (par. 9e(2)). Percentage levels and location accuracies are determined as shown below.

c. *Zones.* Actual depth of zones used are based on professional judgment within the following limits:

- (1) Zone I—2,000 to 5,000 meters in depth from the forward edge of the battle area (FEBA).
- (2) Zone II—the area from the rear boundary of zone I to a maximum depth of 10,000 meters.
- (3) Zone III—all area of interest beyond the rear boundary of zone II.

d. *Zone I Play.* The following percentage levels of intelligence as a function of "time in contact with the enemy" apply:

Table VI. Zone I percentage levels of intelligence.

Time in contact	Percentage level
Up to 1 day.....	25
Up to 2 days.....	35
Up to 3 days.....	40
Up to 4 days.....	45
Up to 5 days.....	50
Up to 6 days.....	55
Up to 7 days.....	60
Past 7 days.....	60

Note. Once active play has commenced, commanders may request intelligence on specific priority targets in zone I. The percentage levels listed above may be applied to the target, or segments of the target, as probabilities of detection. Large area targets, such as a battalion in an assembly area, may be divided into two or more smaller targets to which an appropriate probability is applied.

e. *Zone II Play.* The following percentage levels of intelligence as a function of "time in contact with the enemy" apply:

Table VII. Zone II percentage levels of intelligence.

Time in contact	Percentage level
Up to 1 day.....	15
Up to 2 days.....	25
Up to 3 days.....	30
Up to 4 days.....	35
Up to 5 days.....	40
Up to 6 days.....	45
Up to 7 days.....	50
Past 7 days.....	55

Note. Same applies as in the case of zone I.

f. *Zone III Play.* A constant 8 percent intelligence level is furnished for zone III to the opposing forces. Once active play begins, each player team may request intelligence of specific priority targets in zone III. The same method of determining the intelligence play for zones I and II in this case is used for zone III.

11. Location Errors

Locations of elements identified in zone I are always reported accurately. Locations of elements identified in zones II and III may be reported to the opposing player teams in accordance with data contained in table VIII. Select a number randomly for each element identified. The corresponding error in range and azimuth defines the location that is reported to the player force concerned.

Table VIII. Intelligence location errors.

ZONE II			ZONE III		
Item No.	Range error (meters)	Azimuth	Item No.	Range error (meters)	Azimuth
1	800	SE	1	700	WSW
2	500	ESE	2	2,200	SW
3	-----	-----	3	1,500	S
4	200	NE	4	1,000	ESE
5	700	ENE	5	1,500	N
6	600	WSW	6	500	ENE
7	200	WSW	7	2,000	NW
8	400	WNW	8	300	SE
9	100	SW	9	200	SW
10	500	SE	10	600	WNW
11	700	S	11	2,400	E
12	600	N	12	400	ESE
13	300	SW	13	400	WNW
14	400	SSE	14	2,300	SW
15	600	SE	15	300	ENE
16	200	WNW	16	500	WSW
17	1,000	E	17	1,000	SE
18	400	NW	18	1,400	S
19	400	NNE	19	600	NE
20	700	W	20	500	NW

Part Five. MOVEMENTS AND FORCE RATIOS

12. Firepower Scores

a. To establish a basis for computing firepower, a numerical rating is assigned each unit. The numerical rating or firepower score for a particular unit is based on the effectiveness of that unit's weapons in comparison with other units' weapons.

b. The control group maintains an accurate record of effective firepower at all times (charts are provided for this purpose). The control group promptly adjusts the initial firepower score of units (100 percent of TOE) by the percentage of the units' personnel losses and replacements. The firepower score of attached and supporting units is added to that of the supported unit. Only those units actually engaged in the firefight or in position to support the action are considered.

c. Firepower scores are shown in tables in appendixes VI and VII based on 100 percent of TOE. Firepower scores are reduced as casualties and damage are assessed.

13. Rates of Advance

A force is considered to be advancing against either a relatively stationary opposing force (attack of a defended position) or another advancing force (a meeting engagement). Rates of advance are shown in tables XXV and XXVI and are based on the size of the opposing force and the characteristics of the terrain. All advancing forces are considered to pass through several range steps in each of which the level of opposition and the general characteristics of the battle area are shown in table XXVII. Ranges are measured from the leading elements of the advancing force to the forward edge of the defender's positions (or leading elements of opposing advancing forces).

14. Effectiveness of Units Sustaining Casualties

The effectiveness of units sustaining casualties is considered in the attack and the defense.

a. The largest unit evaluated is the battalion.

b. Units, other than artillery, whose missions require them to occupy a position in offensive operations, e.g., chemical smoke generator units or command posts, are judged by defensive criteria for infantry units.

c. All type units displacing forward on the approach march are considered attacking units.

d. All type units on the march rearward are assumed to be in a defensive role.

e. A unit's effectiveness after recuperation (if possible) from a nuclear attack is determined by the number of survivors; and in the case of tank, artillery, signal, and engineer units by usable material left. For example, for artillery units, the percentage of tubes still serviceable is used as the measure of effectiveness, provided sufficient survivors and fire control equipment are available to serve the pieces and carry out the assigned mission.

15. Infantry

a. *Attacking Units.*

(1) Casualties to an attacking unit may have one of three results:

(a) The attack will be continued by the survivors without delay.

(b) A type I break will occur. In this case the attacking unit will be pinned down or forced to withdraw in partial disorder, but will be able to reorganize in 2 to 24 hours and continue attacking successfully or organize a hasty defense after 1 hour if terrain and distance permit.

(c) A type II break will occur. In this case, the attacking unit requires at least 48 hours to recuperate before being able to resume the attack. Figure 20 may be used to determine if the unit can accomplish a defensive mission. If it can, a time delay from figure 21, based on casualties sustained, will be imposed.

(2) The probability that the unit will break is found by entering the percentage casualties into figure 18 and using the curve labeled "any break." This probability is used in conjunction with the table of random numbers to determine if the break occurs. If the unit does not break, the attack can be continued by survivors without delay.

(3) If the decision is positive, then the curve labeled "type II break" in figure 18 is used in the same manner to determine if the break is type II. If the break is not type II, then it is type I, and the percentage of casualties is entered into figure 19 to determine the period for which the unit will be ineffective as a fighting force. At the end of this period, the survivors are considered to be fully effective.

Attack

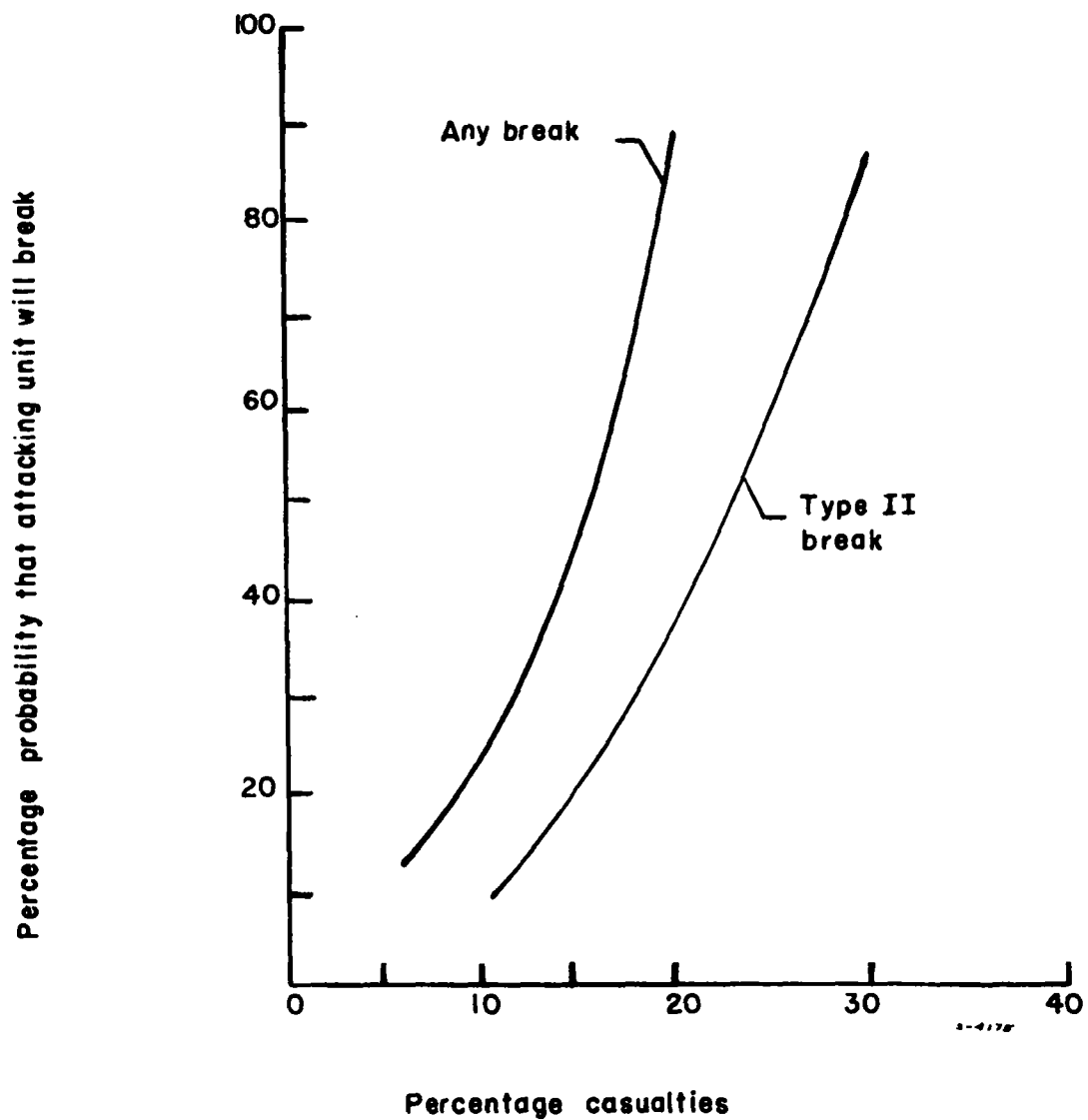


Figure 18. Probability of attacking unit breaking.

Attack

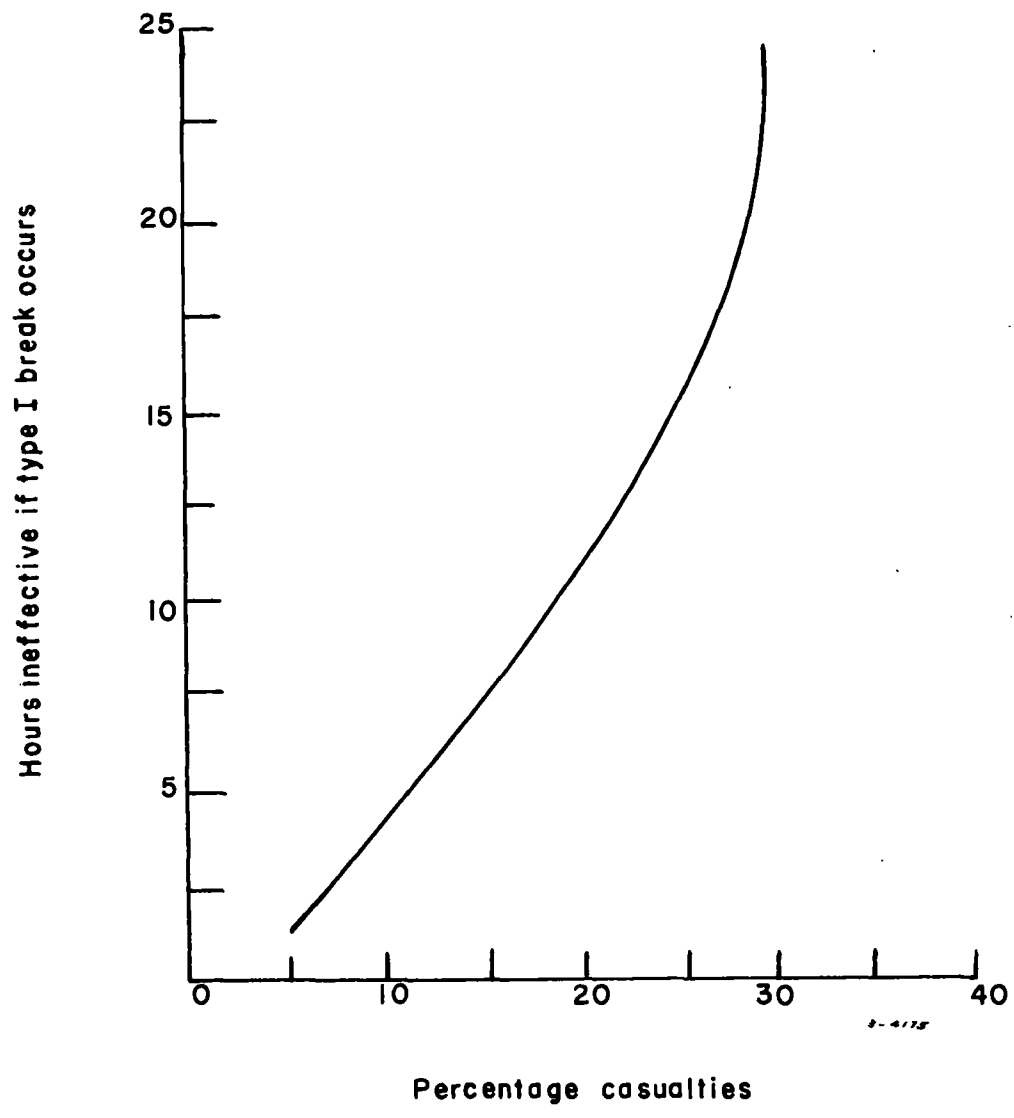


Figure 19. Ineffective time for attacking units.

Defense

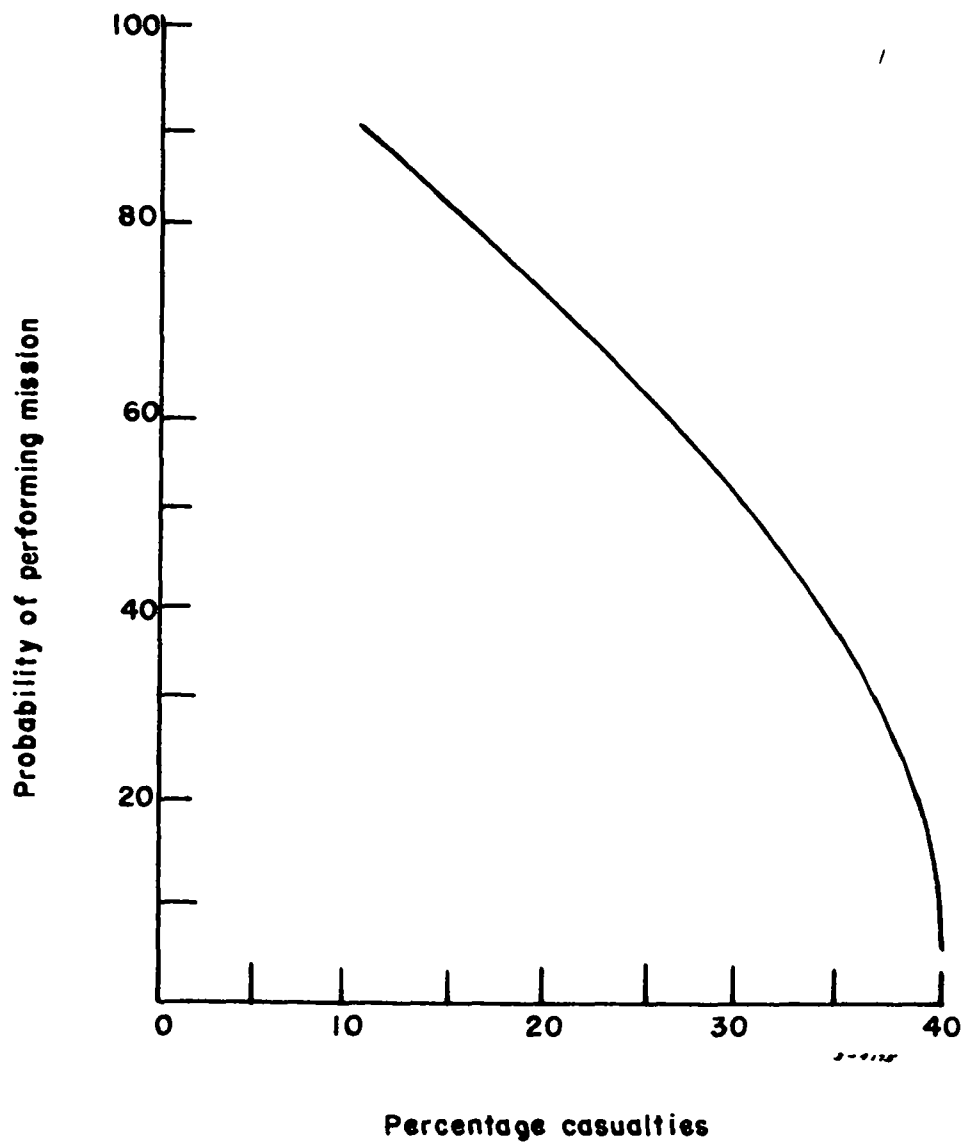


Figure 20. Probability of defending unit performing mission.

Defense

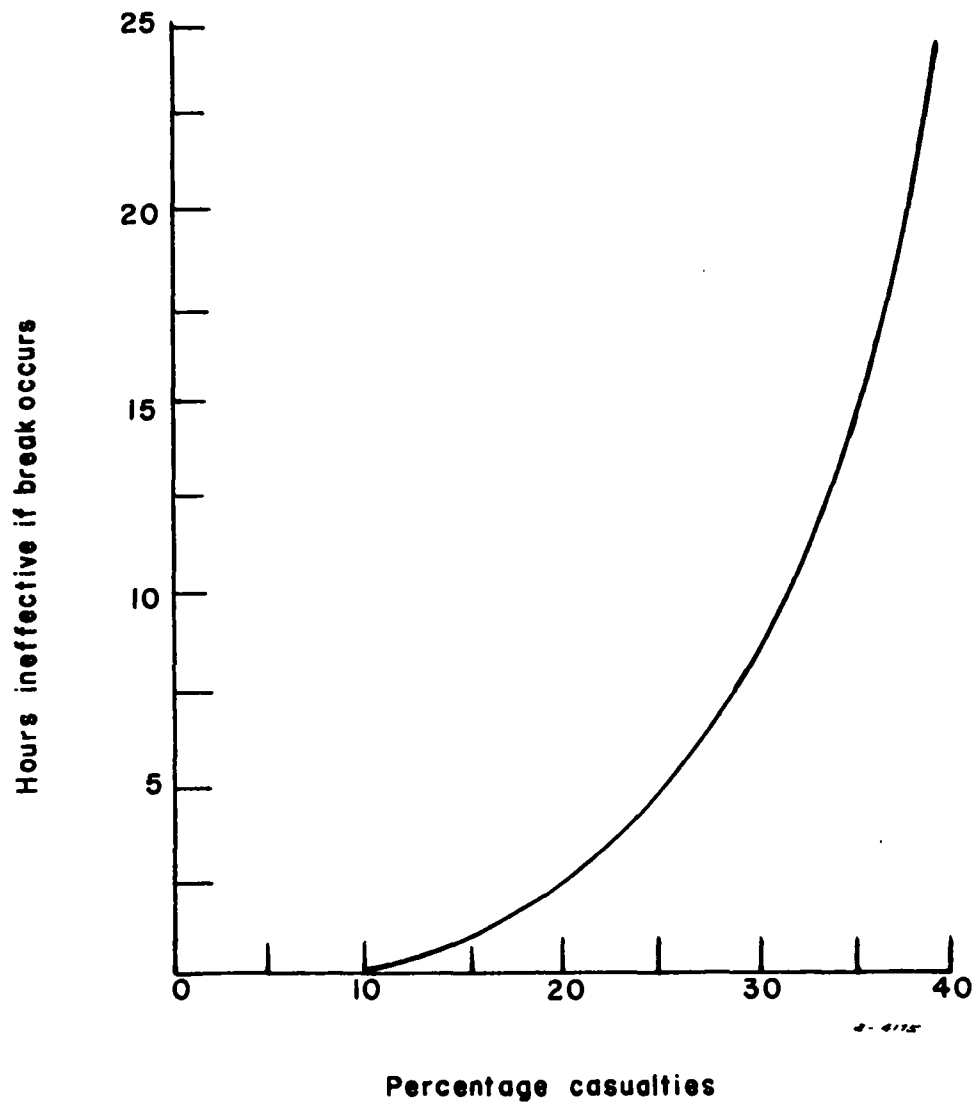


Figure 21. Ineffective time for defending unit.

b. Defending Units.

- (1) Casualties to a defending unit may have one of three results:
 - (a) The defense will be continued by the survivors without delay.
 - (b) The defending unit will require up to 24 hours to recuperate before being able to resume the defense.
 - (c) The defending unit will be totally ineffective and must be replaced.
- (2) If the percentage of casualties is 10 percent or less, then result (a) above will occur. If the percentage of casualties is 40 percent or greater, then result (c) above will occur. If the percentage of casualties is greater than 10 percent but less than 40 percent, the percentage is entered into figure 20 and the probability for the unit to continue defending without delay is found. This probability is used in conjunction with the table of random numbers to determine if the event will occur. If the decision is positive, result (a) above will occur.
- (3) If the decision is negative, then result (b) above will occur. In this case, the percentage of casualties is entered into figure 21 to determine the period that the unit will be ineffective as a defending force. At the end of the period, the survivors are considered to be fully effective.

16. Artillery

If an artillery unit has been subjected to nuclear attack and suffers a large percentage of casualties in a short period, its capability to continue to

perform its mission is determined by using figures 20 and 21 (curves for defending infantry units) in the same manner as described in paragraph 15b. If and when the unit is capable of continuing with its assigned mission, its tube effectiveness is determined as follows:

<i>Percentage casualties</i>	<i>Percentage tube effectiveness</i>
0-10	100
10-20	90
20-30	80
30-40	70
40-50	60
50-60	50
Over 60	Unit noneffective

17. Armor

a. The tank battalion and armored cavalry squadron are the largest units whose effectiveness is evaluated by the method described below.

b. Armored units in all types of action, except under nuclear attack, may continue on their assigned mission until the unit has suffered 67 percent tank losses.

c. The capability of armored units that have been subjected to nuclear attack to continue on their assigned mission is determined by using figures 20 and 21 (curves for defending infantry unit) as described in paragraph 15b. If and when the unit is capable of continuing on its mission, its tank strength is the actual number of serviceable tanks. In estimating the number of serviceable tanks remaining after a nuclear attack, the likelihood must be considered of many mechanically reliable tanks becoming unusable because of radiation. In general, it is assumed for war game play that tanks occupied by personnel who have been declared casualties as a result of excess radiation doses are too "hot" for further use until decontaminated.

Part Six. CASUALTY ASSESSMENT

18. General

Casualties are assessed as a result of nuclear weapons, air attack, conventional artillery (to include supporting mortars), and small-arms fire (to include automatic weapons).

19. Effects of Nuclear Weapons

The effects of the detonation of a nuclear weapon on a given force are determined in accordance with the procedures outlined in the nuclear play calculator.

20. Exposure Criteria

For purposes of consistency in the play of the war game, it is necessary to provide uniform data for guidance in determining the degree of exposure of various units under various conditions. Percentages given in table XXVIII reflect conditions of active nuclear warfare or nonactive nuclear warfare under the immediate threat of nuclear warfare. The following definitions apply for the two conditions shown in table XXVIII.

a. Exposed—no protection from thermal, blast, or radiation effects of nuclear weapons.

b. Protected—all personnel dug in, or in tanks or armored vehicles. For the effects of nuclear weapons, there are three categories of protection:

- (1) Open foxholes.
- (2) Revetted foxholes with overhead cover.
- (3) Tanks or armored vehicles.

21. Effects of Nonnuclear Artillery and Mortar Fires

a. The play of nonnuclear artillery and mortar fire may be aggregated. Personnel casualties and tank losses are assessed, as these losses affect the force ratios. Losses in other materiel, such as artillery and mortar pieces and vehicles, are assessed in proportion to the personnel losses of the unit concerned (par. 16).

b. Combat units within artillery range are divided into two categories:

- (1) Units in contact, which are units within 1,000 meters of the opposing force.
- (2) Units not in contact or units located more than 1,000 meters from the opposing force.

c. Units in contact are considered to be receiving artillery and mortar fire on a continuing basis; therefore, these units are assessed losses throughout fire and maneuver phases of the exercise on a straight percentage for each 30-minute period. Loss assessments are made as follows (per 30 minutes):

- (1) Only units located by intelligence means are assessed losses. Loss assessments are determined as indicated in table XXXI.
- (2) Loss assessments described above are made during periods of active attack or defense.

Should the character of the action change to exploitation, pursuit, or delaying action or in case inactive periods occur, losses computed as above are modified by the following multiplying factors:

Exploitation, pursuit, or delaying action... 0.5
Inactive situation..... 0.25

22. Effects of Small Arms and Automatic Weapons

a. *General.* Small arms and automatic weapon effects are considered only in the final phase of the assault of a defensive position. The effects of small arms and automatic weapons in other phases of the battle are considered to be compensating, one force against the other, and, therefore, do not affect the relative combat power prior to the assault.

b. *General Procedure for Determining Small Arms and Automatic Weapon Losses.*

- (1) Consider that the attacker has advanced and reached a line from which he will launch his final assault (approximately

100 meters). At this line the attack is considered to have passed through the close-in defensive fires of artillery and mortars; the attacker's casualties in so doing have already been determined (conventional artillery and nuclear weapons). If the attacking force has not reached a "break point" because of casualties sustained so far, the force ratio between the attacker and defender is recalculated by the control team. If the force ratio is such that the attacker's force is equal to or greater than that of the defender, the attacker may assault. If the attacker's force is inferior to the defender, he may not assault. The attacker's force is then assumed to have established a hasty defense until it is either withdrawn, relieved, or reinforced for the assault.

- (2) Casualties suffered by the attacker are assessed at the rate of between 2 and 5 percent during the assault. Consider relative firepower, positions, and dispositions of the opposing forces.
- (3) If the attacking force succeeds in over-running the defender's position and does not break because of casualties sustained in the assault, casualties are assessed in accordance with table XXXII.

23. Steps Considered by Loss Computers

The following steps are considered by the casualty computer during the course of one time period of play.

a. *Nuclear Weapons.*

- (1) FM 101-31-1 and 101-31-3—same criteria for either side.
- (2) Exposure criteria—table XXVIII.
- (3) Check for break—paragraph 15.
- (4) Recalculate percentage effectiveness and unit strength.

b. *Artillery.*

- (1) Attacker—table XXXI.
- (2) Defender—table XXXI.
- (3) Check both sides for break—paragraph 15.
- (4) Recalculate percentage effectiveness for both sides.

c. *Small Arms.*

- (1) Recalculate force ratio—part five.
- (2) Check force ratio—if equal to or greater than 1:1, the attacker may assault.
- (3) Assess assault casualties—paragraph 22b(2).

d. *Recalculate Percentage Effectiveness of Attacker and Defender.*

Part Seven. TANK PLAY

24. General

Tank and anti-tank weapons against tank actions are considered in the determination of tank losses. These include anti-tank mines, 3.5 rocket launchers, and any other tank killer weapons within range and properly employed.

25. Rules of Play

a. When tanks maneuver against tanks (provided

they are within effective range), tank losses are assessed in the inverse ratio of participating tanks.

b. Example: Aggressor attacks with 20 tanks and is opposed by a US force employing 10 tanks. Tank losses are then assessed in the ratio of one Aggressor tank to two US tanks.

c. Terrain, tactical employment, and duration of the action are considered in determining the number of losses to be assessed.

APPENDIX V

FIREPOWER SCORES, US AND AGGRESSOR WEAPONS

Table IX. Firepower scores, U.S. weapons, direct fire.

Weapon	Range	300 Meters	500 Meters	700 Meters	1,000 Meters ¹
Gun, Machine, Cal. 50.....		10	10	10	10
Gun, Machine, 7.62-mm.....		6	6	6	4
Gun, Submachine, Cal. 45.....		0.5			
Gun, 40-mm, AW (SP).....		15	15	15	15
Gun, 90-mm (SP).....		15	15	15	15
Kit, Machinegun, Dual, KX-13-A1-2.....		12	12	12	8
Kit, Machinegun, Quad, M-153.....		24	24	24	16
Kit, ATGM SS-11 & ENTAC Aslt Guided Msl.....			20	20	20
Kit, Rocket 2.75-inch.....		10	10	10	10
Launcher, Grenade 40-mm.....		5			
Launcher, Rocket 3.5-inch.....		10	5		
Light Assault Weapon M72.....		10			
Rifle, 7.62-mm M14.....		1	0.5		
Rifle, 7.62-mm M14 (M).....		4	2	1	
Rifle, 90-mm.....		15	15	7	
Rifle, 106-mm.....		20	20	20	20
Tank, 76-mm Gun ²		28	28	28	26
Tank, 90-mm Gun ²		30	30	30	28
Tank, 105-mm Gun ²		32	32	32	30
Tank, 120-mm Gun ²		34	34	34	32
Howitzer, 75-mm.....		10	10	10	10
Howitzer, 105-mm.....		20	20	20	20
Howitzer, 155-mm.....		30	30	30	30
Gun, 175-mm.....		75	75	75	75
Howitzer, 8-inch.....		100	100	100	100

¹ Firepower score is extended to limit of effective combat range.

² Includes secondary armament.

Table X. Firepower scores, U.S. weapons, indirect fire.

Weapon	Range (Meters)	Firepower Score
Mortar, 81-mm.....	100— 3,650	12
Mortar, 4.2-inch.....	777— 5,486	15
Howitzer, 75-mm.....	0— 8,800	10
Howitzer, 105-mm.....	0—11,000	20
Howitzer, 155-mm.....	0—14,600	50
Howitzer, 8-inch.....	0—16,800	100
Gun, 175-mm.....	0—32,800	75
	(Assumed)	
Tank, 76-mm Gun.....	0—14,320	10
Tank, 90-mm Gun.....	0—18,150	13
Tank, 105-mm Gun.....	0—22,290	20
Tank, 120-mm Gun.....	0—18,200	35

Table XI. Firepower scores, aggressor weapons, direct fire.

Weapon	Range	300 Meters	500 Meters	700 Meters	1,000 Meters ¹
Rifle, 7.62-mm.....		1	.5		
SMG, 7.62-mm.....		1			
LMG, 7.62-mm.....		4	4	4	2
HMG, 7.62-mm.....		6	6	6	4
14.5-mm AA Machinegun (dual).....		20	20	20	20
14.5-mm AA Machinegun (quad).....		30	30	30	30
37-mm AA Gun.....		20	20	20	20
57-mm AA Gun.....		23	23	23	23
57-mm AA Gun (dual) (SP).....		32	32	32	32
57-mm AT Gun (SP).....		23	23	23	23
57-mm AT Gun.....		20	20	20	20
76-mm Mountain Gun (Howitzer).....		22	22	22	22
82-mm Squad AT Launcher.....		10			
82-mm Recoilless Rifle.....		15	7		
85-mm Gun.....		28	28	28	28
85-mm AT Gun.....		28	28	28	28
85-mm AT Gun (SP).....		28	28	28	28
85-mm AA Gun.....		28	28	28	28
100-mm Gun.....		30	30	30	30
100-mm AT Gun (SP).....		30	30	30	30
100-mm AA Gun.....		30	30	30	30
107-mm Recoilless Rifle.....		20	20	20	20
122-mm Howitzer.....		35	35	35	35
122-mm Gun.....		35	35	35	35
122-mm Gun (SP).....		35	35	35	35
130-mm Gun.....		40	40	40	40
152-mm Gun/Howitzer.....		50	50	50	50
152-mm Gun (SP).....		50	50	50	50
203-mm Gun/Howitzer.....		100	100	100	100
310-mm Gun (SP).....		130	130	130	130
Tank, 76-mm Gun ²		28	28	28	26
Tank, 100-mm Gun ²		31	31	31	29
Tank, 122-mm Gun ²		34	34	34	32

¹ Firepower score is extended to limit of effective range.

² Includes secondary armament.

Table XII. Firepower scores, aggressor weapons, indirect fire.

Weapon	Range (Meters)	Firepower Score
14.5-mm AA Machinegun (dual).....	2,000	2
14.5-mm AA Machinegun (Quad).....	2,000	4
37-mm AA Gun.....	8,000	6
57-mm AA Gun.....	8,400	8
57-mm AA Gun (dual) (SP).....	8,400	16
57-mm AT Gun (SP).....	8,400	8
57-mm AT Gun.....	8,400	8
76-mm Mountain Gun (Howitzer).....	10,100	10
82-mm Mortar ¹	3,040	12
85-mm Gun.....	15,500	15
85-mm AT Gun.....	15,500	15
85-mm AT Gun (SP).....	15,000	15
85-mm AA Gun.....	15,500	15
100-mm Gun.....	21,000	18

See footnotes at end of table.

Table XII. Firepower scores, aggressor weapons, indirect fire—Continued

Weapon	Range (Meters)	Firepower Score
100-mm AT Gun (SP).....	21,000	18
100-mm AA Gun.....	21,000	18
120-mm Mortar ¹	5,700	20
122-mm Howitzer.....	11,800	20
122-mm Gun.....	21,900	20
122-mm Gun (SP).....	21,900	20
130-mm Gun.....	27,600	25
140-mm Multiple Rocket Launcher.....	9,000	28
152-mm Gun/Howitzer.....	18,300	40
152-mm Gun (SP).....	18,300	30
160-mm Mortar ¹	8,070	25
200-mm Multiple Rocket Launcher.....	19,000	100
203-mm Gun Howitzer.....	29,250	100
240-mm Mortar ¹	9,700	120
240-mm Multiple Rocket Launcher.....	9,000	120
280-mm Multiple Rocket Launcher.....	23,000	125
310-mm Gun (SP).....	22,900	130
400-mm Mortar (SP) ¹	21,000	150
Tank, 76-mm Gun.....	14,000	10
Tank, 100-mm Gun.....	21,000	20
Tank, 122-mm Gun.....	21,900	35
Free Rockets ²		
NERONO.....	8,000—24,000	-----
KOLOSSO.....	16,000—58,000	-----
Surface-to-Surface Missiles		
TONDRO ²	80km—320km	-----
FULMO ²	240km—560km	-----
SUPRO ³	560—1,120km	-----
TERURO ³	2,400—12,000km	-----
Surface-to-Air Missiles ²		
BULTURO.....	Vert: 15— 15,000	-----
	Horiz: 15— 20,000	-----
SAGO.....	Vert: 2,000— 19,000	-----
	Horiz: 2,000— 64,000	-----
AGLO.....	Vert: 4,000— 30,000	-----
	Horiz: 20,000—130,000	-----

¹ Minimum range is in excess of 700 meters.

² While these weapons have an HE capability, it is considered that their use will be confined to the delivery of CW, BW or nuclear fires.

³ Nuclear warhead.

APPENDIX VI

UNIT FIREPOWER SCORES, AGGRESSOR DIVISIONS

Table XIII. Firepower score, aggressor airborne division.

Airborne Division ¹					
Unit	Range	300 Meters	500 Meters	700 Meters	1,000 Meters
Airborne Parachute Regiment.....		2,055	1,092	1,164	858
Parachute Rifle Battalion ¹		685	364	388	286
Airborne Mixed Regiment.....		2,044	1,605	1,575	1,395
Airborne Rifle Battalion, Helicopter.....		648	535	525	456
Airborne Rifle Company.....		99	72	54	40
Airborne Rifle Platoon.....		27	18	12	6
Airborne Rifle Squad.....		9	6	4	2
Machinegun Platoon.....		18	18	18	12
Machinegun Company.....		42	42	42	24
Machinegun Platoon Light.....		12	12	12	6
Machinegun Platoon Heavy.....		18	18	18	12
Mortar Company ²				72	72
Airborne Antitank Company.....		129	97	69	69
57-mm Antitank Gun Platoon.....		69	69	69	69
82-mm Recoilless Gun Platoon.....		60	28		
Airborne Antiaircraft Company.....		180	180	180	180
Airborne Antiaircraft Platoon.....		90	90	90	90
Airborne Rifle Battalion, Parachute ³		648	535	525	465
Airborne Reconnaissance Comapny.....		90	90	90	46
Motorcycle Platoon.....		28	28	28	14
Antiaircraft Battalion.....		1,113	849	618	618
Mortar Regiment.....		72	72	612	576
Antitank Battalion.....		1,386	826	336	336

¹ Same as motorized rifle battalion, motorized rifle division.

² Minimum range is in excess of 500 meters.

³ Same as Airborne Rifle Battalion, Helicopter.

Figures indicate the firepower of all unit weapons which can be employed at the ranges shown.

Table XIV. Firepower score, aggressor motorized rifle division.

Motorized Rifle Division					
Unit	Range	300 Meters	500 Meters	700 Meters	1,000 Meters
Motorized Rifle Regiment.....		3,830	2,867	3,059	2,689
Rifle Battalion.....		685	364	388	286
Rifle Company.....		180	81	72	38
Rifle Platoon.....		56	23	20	10
Rifle Squad.....		16	5	4	2
Mortar Battery ¹				72	72

See footnotes at end of table.

Table XIV. Firepower score, aggressor motorized rifle division—Continued

Motorized Rifle Division					
Unit	Range	300 Meters	500 Meters	700 Meters	1,000 Meters
Artillery Battery.....		145	121	100	100
Recoilless Rifle Platoon.....		45	21	-----	-----
Antitank Gun Platoon.....		60	60	60	60
Antiaircraft Artillery Machinegun Platoon.....		40	40	40	40
Medium Tank Battalion.....		992	992	992	928
Tank Company.....		310	310	310	290
Tank Platoon.....		93	93	93	87
Antiaircraft Artillery Battalion.....		318	318	318	318
57-mm Gun Battery.....		138	138	138	138
14.5-mm Machinegun Battery.....		180	180	180	180
Reconnaissance Company.....		177	177	117	177
Reconnaissance Platoon.....		59	59	59	55
Mortar Battery ¹		-----	-----	120	120
Mortar Section ¹		-----	-----	40	40
Recoilless Rifle Battery.....		120	120	120	120
Recoilless Rifle Section.....		40	40	40	40
Antitank Battery.....		168	168	168	168
Antitank Section.....		56	56	56	56
Medium Tank Regiment ²		3,777	3,777	3,777	3,511
Tank Battalion.....		3,927	3,927	3,927	3,661
Tank Company.....		992	992	992	928
Tank Platoon.....		310	310	310	290
Assault Gun Company ²		93	93	93	87
Assault Gun Platoon ²		350	350	350	350
Assault Gun Platoon ²		500	500	500	500
Assault Gun Platoon ²		175	175	175	175
Assault Gun Platoon ²		250	250	250	250
Antiaircraft Artillery Battery.....		212	212	212	212
Antiaircraft Artillery Platoon.....		96	96	96	96
Reconnaissance Company.....		177	177	177	165
Reconnaissance Platoon.....		59	59	59	55
Reconnaissance Battalion.....		650	650	650	610
Medium Tank Company.....		310	310	310	290
Tank Platoon.....		93	93	93	93
Amphibious Tank Company.....		280	280	280	260
Tank Platoon.....		84	84	84	78
Armored Carrier Company.....		60	60	60	60
Armored Carrier Platoon.....		20	20	20	20
Artillery Regiment.....		1,278	1,278	1,734	1,682
100-mm Gun Battalion.....		576	576	576	558
Firing Battery.....		192	192	192	186
Firing Platoon.....		64	64	64	62
122-mm Howitzer Battalion.....		666	666	666	648
Firing Battery.....		222	222	222	216
Firing Platoon.....		74	74	74	72
160-mm Mortar Battalion ¹		36	36	492	486
Firing Battery ¹		12	12	164	162
Firing Platoon ¹		4	4	54	52
Rocket Launcher Battalion ¹		-----	-----	8,064	8,064
Firing Battery ¹		-----	-----	2,688	2,688
Antiaircraft Artillery Regiment.....		1,792	1,792	1,792	1,792
57-mm Gun Battery Towed.....		217	217	217	217
Firing Section.....		69	69	69	69
57-mm Gun Battery (twin SP).....		308	308	308	308
Firing Section.....		96	96	96	96

¹ Minimum range in excess of 500 meters.² Upper scale used when equipped with 122-mm gun, and the lower scale is used when equipped with 152-mm gun.

Figures indicate the fire power of all unit weapons which can be employed at the ranges shown.

Table XV. Firepower score, aggressor tank division.

Tank Division					
Unit	Range	300 Meters	500 Meters	700 Meters	1,000 Meters
Medium Tank Regiment ^{1 2}		3,777	3,777	3,777	3,511
		3,927	3,927	3,927	3,661
Heavy Tank Regiment		3,531	3,531	3,531	3,333
Tank Battalion		1,054	1,054	1,054	992
Tank Company		340	340	340	320
Tank Platoon		170	170	170	160
Reconnaissance Company		177	177	177	165
Reconnaissance Platoon		59	59	59	55
Antiaircraft Artillery Battery		192	192	192	192
Firing Platoon		96	96	96	96
Motorized Rifle Regiment ³		3,830	2,867	3,059	2,689
Reconnaissance Battalion ⁴		650	650	650	610
Artillery Regiment		1,998	1,998	1,998	1,998
122-mm Howitzer Battalion ⁵		666	666	666	648
Rocket Launcher Battalion ⁶				23,040	23,040
Firing Battery				11,520	11,520
Antiaircraft Artillery Regiment ⁷		1,792	1,792	1,792	1,792
Assault Gun Battalion ²		1,120	1,120	1,120	1,120
		1,165	1,165	1,165	1,165
Assault Gun Company ²		350	350	350	350
		365	365	365	365
Assault Gun Platoon ²		105	105	105	105
		150	150	150	150

¹ Same as Medium Tank Regiment, Motorized Rifle Division.

² Upper scale used when equipped with 122-mm gun and the lower scale is used when equipped with 152-mm gun.

³ Same as Motorized Rifle Regiment, Motorized Rifle Division.

⁴ Same as Reconnaissance Battalion, Motorized Rifle Division.

⁵ Same as 122-mm Howitzer Battalion, Motorized Rifle Division.

⁶ Minimum range in excess of 500 meters.

⁷ Same as Antiaircraft Artillery Regiment, Motorized Rifle Division.

Figures indicate the firepower of all unit weapons which can be employed at the ranges shown.

APPENDIX VII

UNIT FIREPOWER SCORES, US DIVISIONS

Table XVI. Firepower score, infantry battalion.

Infantry Battalion					
Unit	Range	300 Meters	500 Meters	700 Meters	1,000 Meters
Battalion.....		1,367	969	661	496
Rifle Company.....		425	273	151	100
Rifle Platoon.....		113	64	25	8
Rifle Squad.....		23	7	2	-----
Weapon Squad.....		44	43	19	8
Weapon Platoon.....		76	76	76	76
81-mm Mortar Section.....		36	36	36	36
Antitank Squad.....		20	20	20	20
Battalion Reconnaissance Platoon.....		92	90	88	76
Scout Section.....		40	38	36	24
Tank Section.....		40	40	40	40
Support Squad.....		12	12	12	12
Battalion Mortar Section.....			-----	60	60
Battalion Antitank Platoon.....			60	60	60
Antitank Squad.....			20	20	20

Note. Figures indicate the fire power of all unit weapons which can be employed at the ranges shown.

Table XVII. Firepower score, infantry battalion (mechanized).

Infantry Battalion (mechanized)					
Unit	Range	300 Meters	500 Meters	700 Meters	1,000 Meters
Battalion		1,871	1,418	1,136	850
Rifle Company		561	408	306	216
Rifle Platoon		145	94	60	30
Rifle Squad		31	14	8	4
Weapon Squad		52	52	36	18
Weapon Platoon		116	116	116	116
81-mm Mortar Section		36	36	36	36
Antitank Squad		20	20	20	20
Battalion Armored Cavalry Platoon		128	119	98	82
Tank Section		58	56	56	52
Scout Section		54	39	34	26
Rifle Squad		31	14	8	4
Platoon Headquarters		5			
Battalion Heavy Mortar Platoon		60	15	60	60
Battalion Antitank Platoon			60	60	60
Antitank Squad			20	20	20

Note. Figures indicate the firepower of all unit weapons which can be employed at the ranges shown.

Table XVIII. Firepower score, tank battalion.

Tank Battalion ¹					
Unit	Range	300 Meters	500 Meters	700 Meters	1,000 Meters
Battalion ²		1,820	1,781	1,830	1,709
Tank Company ²		536	536	536	502
Tank Platoon.....		160	160	160	150
Battalion Armored Cavalry Platoon.....		148	109	98	82
Scout Section.....		54	39	34	26
Tank Section.....		58	56	56	52
Rifle Squad.....		31	14	8	4
Platoon Headquarters.....		5			
Battalion Mortar Section.....		64	64	124	116

¹ Armored, Infantry, and Infantry Division (mechanized).

² A factor of 1.5 for the tank company and 2.0 for the tank battalion may be applied to these figures to indicate increased values for the shock effect of mass tank attacks at distances of 500 meters or less.

Figures indicate the firepower of all unit weapons which can be employed at the ranges shown.

Table XIX. Firepower score, cavalry squadron.

Cavalry Squadron ¹					
Unit	Range	300 Meters	500 Meters	700 Meters	1,000 Meters
Squadron.....		2,085	1,800	1,909	1,595
Armored Cavalry Troop.....		467	362	401	357
Armored Cavalry Platoon.....		143	108	123	107
Scout Section.....		54	39	34	26
Tank Section.....		58	56	56	52
Rifle Squad.....		31	14	8	4
Support Squad.....		10	10	25	25
Air Cavalry Troop.....		626	658	650	472
Aero Scout Platoon.....		156	236	236	166
Aero Scout Section (light).....		48	48	48	32
Aero Scout Section (heavy).....		96	176	176	124
Aero Rifle Platoon.....		200	152	144	96
Aero Rifle Squad.....		20	8	6	4
Aero Weapons Section.....		136	136	136	104

¹ Armored, Infantry, and Infantry Division (Mechanized).

Figures indicate the firepower of all unit weapons which can be employed at the ranges shown.

Table XX. Firepower score, scout section, brigade headquarters, airborne division.

Scout Section, Brigade Headquarters					
Unit	Range	300 Meters	500 Meters	700 Meters	1,000 Meters
Scout Section.....		54	39	34	26

Table XXI. Firepower score, airborne infantry battalion.

Airborne Infantry Battalion					
Unit	Range	300 Meters	500 Meters	700 Meters	1,000 Meters
Battalion		1,367	1,029	661	496
Rifle Company		425	273	151	100
Rifle Platoon		113	64	25	8
Rifle Squad		23	7	2	-----
Weapon Squad		44	43	19	8
Weapon Platoon		76	76	76	76
81-mm Mortar Section		36	36	36	36
Antitank Squad		20	20	20	20
Battalion Reconnaissance Platoon		92	90	88	76
Scout Section		40	38	36	24
Tank Section		40	40	40	40
Support Squad		12	12	12	12
Battalion Mortar Section		-----	60	60	60
Battalion Antitank Platoon		-----	60	60	60
Antitank Squad		-----	20	20	20

Note. Figures indicate the firepower of all unit weapons which can be employed at the ranges shown.

Table XXII. Firepower score, airborne division tank battalion.

Airborne Division Tank Battalion					
Unit	Range	300 Meters	500 Meters	700 Meters	1,000 Meters
Battalion		901	963	960	938
Tank Company		255	255	255	255
Tank Platoon		75	75	75	75
Battalion Armored Cavalry Platoon		112	114	111	97
Scout Section		26	25	24	16
Tank Section		56	56	56	52
Rifle Squad		30	18	16	14
Support Squad		10	10	25	25
Battalion Mortar Section		24	84	84	76

Note. Figures indicate the firepower of all unit weapons which can be employed at the ranges shown.

Table XXIII. Firepower score, airborne division cavalry squadron.

Airborne Division Cavalry Squadron					
Unit	Range	300 Meters	500 Meters	700 Meters	1,000 Meters
Squadron.....		1,202	1,162	1,142	904
Airborne Cavalry Troop.....		288	252	246	216
Armored Cavalry Platoon.....		96	84	82	72
Scout Section.....		24	24	24	16
Tank Section.....		40	40	40	40
Rifle Squad.....		20	8	6	4
Support Squad.....		12	12	12	12
Air Cavalry Troop.....		626	658	650	472
Aero Scout Platoon.....		156	236	236	166
Aero Scout Section (light).....		48	48	48	32
Aero Scout Section (heavy).....		96	176	176	124
Aero Rifle Platoon.....		200	152	144	96
Aero Rifle Squad.....		20	8	6	4
Aero Weapons Section.....		136	136	136	104

Note. Figures indicate the firepower of all unit weapons which can be employed at the ranges shown.

Table XXIV. Firepower scores, ROAD division artillery units, direct fire.

Field Artillery ¹					
Unit	Range	300 Meters	500 Meters	700 Meters	1,000 Meters
FA Howitzer Battalion 105-mm SP ²		1,103	788	582	208
Hq and Hq Battery.....		139	89	54	36
Service Battery.....		130	78	42	28
Firing Battery.....		278	207	162	148
FA Howitzer Battalion 155-mm, 8-in. SP ²		1,992	1,571	1,282	1,172
Hq and Hq Battery.....		184	119	66	44
Service Battery.....		163	99	48	32
Firing Battery, 155-mm.....		355	282	234	216
Firing Battery, 8-inch.....		580	507	466	448
FA Missile Battalion (Honest John Rocket) SP ³		431	245	114	76
Hq and Hq Battery.....		127	77	42	28
Firing Battery.....		152	84	36	24
FA Howitzer Battalion 105-mm Towed ⁴		1,103	788	582	208
Hq and Hq Battery.....		139	89	54	36
Service Battery.....		130	78	42	28
Firing Battery.....		278	207	162	148
FA Howitzer Battalion 155-mm, 8-in. Towed ⁴		1,992	1,571	1,282	1,172
Hq and Hq Battery.....		184	119	66	44
Service Battery.....		163	99	48	32
Firing Battery, 155-mm.....		355	282	234	216
Firing Battery, 8-in.....		580	507	466	448
FA Howitzer Battalion 105-mm Towed ⁵		1,015	757	564	496
Hq and Hq Battery.....		124	66	30	20
Service Battery.....		129	85	48	32
Firing Battery.....		254	202	162	148
FA Howitzer Missile Battalion ⁵		972	675	488	432
Hq and Hq Battery.....		145	86	48	32
Firing Battery, 155-mm.....		521	417	344	336
Firing Battery, Little John Rocket.....		153	86	48	32

¹ Figures indicate the firepower of all unit weapons which can be employed at the ranges shown.

² Armored division and infantry division (mechanized).

³ Armored, infantry, and infantry division (mechanized).

⁴ Infantry division.

⁵ Airborne division.

Reduce values of howitzer battery by 60 percent and values for battalion by 50 percent if full use is not made of howitzer in defense of a position.

APPENDIX VIII

CONTROL AND UMPIRE CRITERIA

Table XXV. Rates of advance, infantry units.

Ratio of combat power, attacker: defender	Rates of advance in meters per hour		
	Type of terrain		
	Open ¹	Median ²	Close ^{3 4}
2 : 1	450	300	200
3 : 1	550	400	250
4 : 1	700	500	300
5 : 1	1,100	800	450

¹ Open, flat, slightly rolling terrain.

² Rolling, lightly covered with trees (moderately open—moderately close) terrain.

³ Rough, heavily wooded, mountainous terrain.

⁴ Rate of advance contingent on relative difficulty of terrain.

Table XXVI. Rates of advance, mechanized and armored units.

Ratio of combat power, attacker: defender	Rates of advance in meters per hour		
	Type of terrain		
	Open ¹	Median ²	Close ^{3 4}
2 : 1	600	400	250
3 : 1	1,100	750	300
4 : 1	2,200	1,325	350
5 : 1	3,300	1,500	500

¹ Open, flat, slightly rolling terrain.

² Rolling, lightly covered with trees (moderately open—moderately close) terrain.

³ Rough, heavily wooded, mountainous terrain.

⁴ For cavalry and reconnaissance units.

Table XXVII. Effects of separation distances on rates of advance.

Range steps	Action
(1) Ranges greater than 5,000 meters for all types of advancing units.	No significant resistance. Losses are assessed as a result of artillery fires and nuclear weapons.
(2) Ranges between 5,000 and 1,000 meters if either force is predominately a tank or mechanized force; between 5,000 and 500 meters if both forces are predominately infantry.	Light and scattered resistance: (a) Infantry force—use force ratio of 5 to 1 in table XXV. (b) Tank or mechanized force—use force ratio of 5 to 1 in table XXVI. Losses are assessed as a result of artillery fires, nuclear weapons, and tank play as appropriate.
(3) Ranges from 1,000 meters to the infantry assault line if force is predominately tank or mechanized, and from 500 meters to infantry assault line if the force is predominately infantry.	Resistance based on actual force ratios. Losses are assessed as a result of artillery fires, nuclear weapons, and tank play.

Table XXVII. Effects of separation distances on rates of advance—Continued

Range steps	Action
(4) Ranges from the infantry assault position to the objective for infantry units in the attack.	Resistance based on actual force ratios recalculated at the assault line to allow for previous losses (force ratio must equal or exceed 1 to 1 to permit an assault). Losses are now assessed against the attacker from defending small arms fire and against the defender if he is overrun from the attackers small-arms fire. Losses are also assessed as a result of artillery fires and tank play as appropriate.

Table XXVIII. Exposure criteria.

	Percentage Exposed	Percentage Protected
Approach march—Dismounted troops.....	90	10
Motorized (truck) units.....	75	25 ^a
Armored carriers.....	5	95
Assembly areas—(All type units)		
Daylight.....	35	65
Darkness.....	10	90
Defensive position actively engaged		
Infantry.....	35	65
Reinforcing armor.....	15	85
Defensive position not actively engaged		
Daylight.....	15	85
Darkness.....	10	90
Artillery in firing positions		
Daylight		
Towed artillery hasty position.....	50	50
Armored artillery or towed in organic position.....	30	70
Darkness		
Towed artillery hasty position.....	25	75
Armored artillery or towed in organic position.....	15	85
Attack—		
Dismounted infantry.....	85	15
Infantry in armored carriers.....	15	85
Tanks.....	5	95
Command posts—Regiment, brigade, battalion, company	20 percent exposed. 20 percent shielded. ^a 60 percent protected.	
Command posts—Division, corps		

^a Shielded from thermal effects of nuclear weapons only.

Table XXIX. Airstrike casualties.

Target	Casualties per initial pass (percentage) ¹
Marching column, day.....	20
Marching column, night.....	15
Entrucked, day.....	40
Entrucked, night.....	25
In bivouac, dispersed.....	15
In bivouac, not dispersed.....	25
In foxholes.....	5

¹ Percentage of actual number of personnel in an area 50 by 200 meters per aircraft.

Percentages given above are for the initial pass at a target. Assess 10 percent of initial pass percentage for each additional pass on the same target up to a total of 3 additional passes.

Table XXX. Artillery concentration data.

	Effects pattern radius (meters)	Pattern area casualty %		
		Foxholes	Standing/ running	Prone/ in trucks
Battery Volley				
75-mm Howitzer-----	100	0.3%	4%	3%
105-mm Howitzer-----	150	0.3%	4%	3%
155-mm Howitzer-----	150	1 %	8%	6%
8-inch Howitzer-----	150	0.8%	6%	4%
175-mm Gun-----	300	0.2%	2%	1%
4.2-inch Mortar (4 weapons)-----	150	0.3%	4%	3%
Battalion Volley				
75-mm Howitzer-----	150	0.5%	6%	4%
105-mm Howitzer-----	200	0.5%	6%	4%
155-mm Howitzer-----	200	1 %	13%	10%
8-inch Howitzer-----	200	1 %	10%	7%
175-mm Gun-----	300	0.3%	7%	2%

Table XXXI. Assessment of losses due to artillery and mortar fires (per 30-minute period).

	Percentage
1. AGGRESSOR FIRES ON US ATTACKING FORCES	
a. On foot: 100-500 meters (from FEBA) through Aggressor defensive fires.....	6
b. On foot: 500-1,000 meters.....	4
c. Mechanized troops (armored carriers).....	2
d. On foot: beyond 1,000 meters (if detected by intelligence play).....	1
2. AGGRESSOR FIRES ON US RESERVE UNITS (other than armor and artillery)	
If detected by intelligence play.....	2
3. US FIRES ON AGGRESSOR DEFENDING FORCES	
a. Under attack: 100-500 meters.....	2
b. Under attack: 500-1,000 meters.....	1
c. Under attack: beyond 1,000 meters (if detected by intelligence play).....	2

Table XXXII. Defender's casualties due to artillery and mortar fires (per 30-minute period).

If force ratio of attacker to defender is—	Multiply attacker's casualties in the assault by the factors below to obtain defender's casualties
1 : 1	0.33
2 : 1	0.66
3 : 1	1.00
4 : 1	1.33
5 : 1	1.66
6 : 1	2.00
7 : 1	2.33
8 : 1	2.66
9 : 1 or over	3.00

Table XXXIII. Antipersonnel mine casualties.

Apers mine density per meter of minefield front.....	24	20	16	12	8	4	2
Casualties (percentage).....	80	70	60	50	40	30	20

Note. Rates increase with poor visibility and decrease with poor camouflage.

Table XXXIV. Antitank mine tank losses.

AT mine density per meter.....	3	2	1	0.5	0.2
Tank losses (percentage).....	90	80	60	30	10

Note. Rates increase with poor visibility and decrease with poor camouflage.

Table XXXV. U.S. G agent weapon effects table for umpire use.

Code designation	Delivery means (30 sec of fire)	Coverage width and depth or area diameter (in meters)	Casualty level among target personnel (percentage)			
			Masked personnel	Unmasked at time of attack but alerted immediately		Unmasked personnel
				Active	Inactive	
N3	One 105-mm Btry (36 rd).....	300 x 200	2 to 4	10 to 15	5 to 10	50
N4	Two 105-mm Btry (72 rd).....	300 x 200	3 to 5	15 to 25	10 to 20	80
N5	Three 105-mm Btry (98 rd).....	300 x 200	3 to 5	20 to 30	15 to 25	90
N6	One 155-mm Btry (18 rd).....	300 x 200	3 to 5	15 to 25	10 to 20	80
N7	Two 155-mm Btry (36 rd).....	300 x 200	3 to 5	20 to 30	15 to 25	90
N8	Three 155-mm Btry (54 rd).....	300 x 200	3 to 5	30 to 40	20 to 30	90
N9	8-in. Btry (4 rd).....	300 x 200	2 to 4	10 to 15	5 to 10	50
N10	Two 8-in. Btry (8 rd).....	300 x 200	3 to 5	15 to 25	10 to 20	80
N11	155-mm and 105-mm Btry.....	300 x 200	3 to 5	20 to 30	15 to 25	90
N12	155-mm and 8-in. Btry.....	300 x 200	3 to 5	20 to 30	15 to 25	90
N13	Three 105-mm Btry.....	600 x 400	2 to 4	10 to 15	5 to 10	50
N14	Three 155-mm Btry.....	600 x 400	3 to 5	15 to 25	10 to 20	80
N15	M91 R/L (BOLT).....	700 dia	2 to 4	10 to 15	5 to 10	50
N16	Two M91 R/L (BOLT—90 rd).....	700 dia	3 to 5	15 to 25	10 to 20	80
N17	Four M91 R/L (BOLT—180 rd).....	1,000 dia	3 to 5	30 to 40	20 to 30	90
N18	HONEST JOHN.....	1,000 dia	2 to 4	10 to 15	5 to 10	50
N19	LITTLE JOHN.....	500 dia	1 to 2	4 to 8	2 to 5	25
N20	M34A1, 1000-lb Cluster.....	200 x 300	3 to 5	15 to 25	10 to 20	80
N21	MC-1, 750-lb bomb.....	100 x 300	3 to 5	15 to 25	10 to 20	80
N22	Acft Spray (100-gal).....	1,000 x 400	3 to 5	15 to 25	10 to 20	80
N23	Acft Spray (1,000-gal).....	5,000 x 600	3 to 5	15 to 25	10 to 20	80

Notes. 1. When a range of casualty levels is given, the umpire will use the lower, higher, or intermediate figure depending on the CBR discipline of the umpired unit.

2. If personnel are in the open, GB shell fragmentation effects are considered as one-half the effect of an equivalent HE shell.

3. The area coverages for different weapons may be placed on templates for umpire use.

4. Aircraft spray data are for low altitude release (100 meters or less).

Table XXXVI. Aggressor G agent weapon effects table for umpire use.

Code designation	Delivery means (30 sec of fire)	Coverage width and depth or area diameter (in meters)	Casualty level among target personnel (percentage)			
			Masked personnel	Unmasked at time of attack but alerted immediately		Unmasked personnel
				Active	Inactive	
N31	One Mortar Btry.....	300 x 200	3 to 5	15 to 25	10 to 20	80
N32	Two Mortar Btry.....	300 x 200	3 to 5	20 to 30	15 to 25	90
N33	One Arty Btry.....	300 x 200	3 to 5	15 to 25	10 to 20	80
N34	Two Arty Btry.....	300 x 200	3 to 5	20 to 30	15 to 25	90
N35	NERONO Rocket.....	1,000 dia	1 to 2	4 to 8	2 to 5	25
N36	KOLOSSO Rocket.....	1,000 dia	2 to 4	10 to 15	5 to 10	50
N37	Acft Spray (100 Gallon).....	1,000 x 400	3 to 5	15 to 25	10 to 20	80

See footnotes at end of table.

Table XXXVI. Aggressor G agent weapon effects table for umpire use—Continued

Code designation	Delivery means (30 sec of fire)	Coverage width and depth or area diameter (in meters)	Casualty level among target personnel (percentage)			
			Masked personnel	Unmasked at time of attack but alerted immediately		Unmasked personnel
				Active	Inactive	
N38	Acft Spray (1,000 Gallon).....	5,000 x 600	3 to 5	15 to 25	10 to 20	80
N39	140-mm Rocket Launcher.....	500 dia	3 to 5	15 to 25	10 to 20	80
N40	240-mm Rocket Launcher.....	500 dia	3 to 5	15 to 25	10 to 20	80
N41	280-mm Rocket Launcher.....	500 dia	2 to 4	10 to 15	5 to 10	50

Notes. 1. When a range casualty levels is given, the umpire will use the upper, lower, or an intermediate value depending upon the CBR discipline of the umpired unit.

2. If the personnel are in the open, G agent shell fragmentation effects are considered as one-half the effect of an equivalent HE shell.

3. The area coverage for different weapons may be placed on templates for umpire use.

4. Aircraft spray data are for low altitude release (100 meters or less).

Table XXXVII. Terrain contamination criteria for HD and V agents.

Code designation	Delivery means	Area coverage (meters)	Number of rounds	
			HD	V Agents
P1	4.2-in. Mortar Plat.....	300 x 200.....	150	-----
P2	105-mm How Btry.....	300 x 200.....	400	-----
P3	155-mm How Btry.....	300 x 200.....	100	50
P4	8-in. How Btry.....	300 x 200.....	-----	20
P5	M91 Rkt Launcher (BOLT).....	Circular, 700 Dia.....	-----	225
P6	Lt Acft (60 Gal).....	500 x 100.....	2	1
P7	Fighter Acft (200 gal).....	1000 x 100.....	2	1
P8	Cml Mines.....	100 x 100.....	40	20

Note. The table above gives the munition requirement criteria for use in conjunction with tables XXXVIII and XXXIX. If the simulated use of the agent is more or less than that given above, the casualty levels in tables XXXVIII and XXXIX are increased or reduced proportionately.

Table XXXVIII. HD casualty effects for umpire use.

A. Casualty Level in Percentage

Temp ° F	Time in area	Time since area was contaminated					
		0 hr	1 hr	2 hr	4 hr	6 hr	12 hr
50° to 70°	1 min	30	—	—	—	—	—
	30 min	30	10	5	3	2	1
	1 hr	40	20	10	5	5	2
	2 hr	50	30	20	10	8	4
	4 hr	60	40	30	20	15	6
	8 hr	70	50	40	30	20	8
	12 hr +	80	60	50	40	30	10
70° to 90°	1 min	30	—	—	—	—	—
	30 min	40	10	5	1	—	—
	1 hr	50	20	10	2	—	—
	2 hr	60	30	20	3	—	—
	4 hr	80	40	20	3	—	—
	6 hr	90	50	20	4	—	—
90° +	1 min	30	—	—	—	—	—
	30 min	60	10	2	—	—	—
	1 hr	80	20	3	—	—	—
	2 hr	90	20	3	—	—	—
	3 hr	90	30	4	—	—	—

See footnotes at end of table.

Table XXXVIII. HD casualty effects for umpire use—Continued

B. Adjustment Factors for Average Troops

	Protective clothing	Mask only	No protection
Occupying or passing through area.....	0.2	1	10
Crawling or advancing under fire.....	0.5	2	10
Passing through in vehicles.....	0.01	0.1	5
In shelters with overhead cover.....	0.01	0.1	5

- Notes.* 1. Multiply the incapacitating casualty level in table A by the appropriate factor in table B. When the result is over 100 percent use 100 percent. Casualties are assessed over a period of 4 to 12 hours.
2. If the state of CBR discipline of the unit is superior, reduce the casualty level by half; if the CBR discipline of the unit is poor, double the casualty level.
3. If winter clothing is being worn, reduce the casualty level by half.
4. A closed vehicle is considered a substitute for protective clothing.
5. The 1 minute time in area indicates that the troops are in the area at the time of agent delivery. If the troops are able to take cover from the agent splash and spray, the casualty level is reduced by half, or as the umpire sees fit based on CBR defense measures taken.

Table XXXIX. V agent casualty effects for umpire use.

A. Casualty Level in Percentage

Time in area	Time since area was contaminated					
	0 hr	1 hr	2 hr	6 hr	12 hr	24 hr
1 min.....	30					
30 min.....	40	30	30	20	10	2
1 hr.....	50	40	30	20	10	5
2 hr.....	60	50	40	30	20	10
4 hr.....	70	60	40	30	20	10
8 hr.....	70	60	40	30	20	10
16 hr.....	80	70	50	30	20	10

B. Adjustment Factors

	Mask and protective clothing	Mask only	No protection
Occupying or passing through area.....	0.2	1	3
Crawling or advancing under fire.....	0.5	2	5
Passing through in vehicles.....	0.01	0.1	3
In shelters with overhead cover.....	0.01	0.05	3

- Notes.* 1. Multiply the casualty level obtained in Table A by the appropriate adjustment factor from Table B. When the result is over 100 percent, use 100 percent. Casualties are assessed over a period of 4 to 24 hours after exposure.
2. 75 percent of the V agent casualties will be deaths if no treatment is given.
3. If the CBR discipline of the unit is superior, reduce the casualty level by half, if the CBR discipline of the unit is poor, double the casualty level.
4. If winter clothing is being worn, reduce the casualty level by half.
5. A closed vehicle is considered a substitute for protective clothing.
6. The 1 minute time in area indicates that the troops are in the target area at the time of V agent delivery. If the troops are able to take cover from agent splash and spray, the casualty level is reduced by half, or as the umpire sees fit based on CBR defense measures taken.

Table XL. Biological agent casualty effects for aggressor rockets and guided missiles.

Height of bomblet release (meters)	Area coverage radius (km)	Casualty level in the area (in percentage)											
		NERONO rocket			KOLOSSO rocket			TONDRO missile			FULMO missile		
		LF	TI	SF	LF	TI	SF	LF	TI	SF	LF	TI	SF
3000-----	3	90	90	90	99	99	99	99	99	99	99	99	99
5000-----	5	70	70	70	90	90	90	90	90	90	90	90	90
10000-----	10	50	50	50	70	70	70	60	70	60	70	80	70
15000-----	15	30	40	50	50	60	50	40	50	40	50	60	50
20000-----	20	10	20	10	20	30	20	20	30	20	30	40	30

Notes. 1. Casualty level is based on night dissemination against unprotected personnel. The following degradation factors may be applied for protection and terrain:

Troops masked during exposure----- 0.10 to 0.25

Troops immunized----- 0.5

Hilly or mountainous terrain----- 0.5

2. The agents (hypothetical) and their times of effectiveness are—

SF (September Fever)—effective up to 3 hours after release.

TI (Toledo Infection)—effective up to 10 hours after release.

LF (Lugo Fatigue)—effective up to 3 hours after release.

Table XLI. Biological agent effects for aggressor aerial spray systems.

Aggressor weapon	BIO agent	Length of release line	Downwind distance to the specified casualty level		
			90 percent	50 percent	30 percent
Fighter Acft-----	LF	50 km	30 km	40 km	45 km
	TI	50 km	80 km	90 km	100 km
	SF	50 km	40 km	45 km	50 km
Attack Bomber-----	LF	100 km	30 km	40 km	45 km
	TI	100 km	80 km	90 km	100 km
	SF	100 km	40 km	45 km	50 km
Heavy Bomber-----	LF	300 km	30 km	40 km	45 km
	TI	300 km	80 km	90 km	100 km
	SF	300 km	40 km	45 km	50 km
Ground Generator-----	LF	100 m	1 km	2 km	3 km
	TI	100 m	2 km	3 km	4 km
	SF	100 m	1 km	2 km	3 km

Notes. 1. Casualty level and downwind distance are based on night dissemination against unprotected personnel. The following degradation factors may be applied for protection:

Troops masked during exposure----- 0.10 to 0.25

Troops Immunized----- 0.5

2. For hilly or mountainous terrain, reduce the downwind distance by half.

3. The agents (hypothetical) and their times of effectiveness are:

SF (September Fever)—Effective up to 3 hours after release.

TI (Toledo Infection)—Effective up to 10 hours after release.

LF (Lugo Fatigue)—Effective up to 3 hours after release.

4. The initial touchdown point for aerial spray will be about 10 times the height of release downwind from the release line. If release height is not known, the umpire may use 1,000 meters from the release line.

Table XLII. Assessment of damage to ground targets by aircraft.

Target	Damage per sortie ¹
Unarmored vehicles-----	3
Armored vehicles-----	1
POL dumps-----	20 percent
Ammo dumps-----	20 percent

See footnotes at end of table.

Table XLII. Assessment of damage to ground targets by aircraft—Continued

Target	Damage per sortie ¹
Supply dumps.....	20 percent
Gun emplacements.....	1
Field pieces.....	1
Buildings (per building).....	40 percent
Missile launching site.....	1
Nuclear logistic installation.....	1

¹ In no case will the assessment exceed the number of actual targets.

Percentages given above are for the initial pass on a target. Assess 10 percent of initial pass percentage for each additional pass on the same target up to a total of three additional passes.

Table XLIII. Minefield breaching data.

Activity	Average rate	Probable casualties for mines
Breach and mark (tracing tape) a 3-foot to 5-foot path through the entire field, marking AT mines and hand neutralizing all apers mines encountered.	50 meters per hour (flat, open terrain, some tall grass).	1 per 100 meters of depth.
Breach and mark (tracing tape) two 3-foot to 5-foot paths, 7 meters on either side of and parallel to center line, marking AT mines and hand neutralizing apers mines.	50 meters per hour (terrain as above).	1 per 50 meters of depth.
Breach and mark 7-meter vehicular lane, marking AT mines and hand neutralizing apers mines.	50 meters per hour (terrain as above).	2 per 50 meters of depth.
Uncover and remove by rope all AT and apers mines previously marked by above parties.	5 min per man per mine.	25 percent of rates shown above for breaching and marking (caused mainly by undetected and unmarked small nonmetallic mines).

Notes. 1. For integrated HE-chemical minefield, decrease rates above 50 percent and increase probable casualty estimates by 50 percent.
2. For terrain conditions other than those shown, minefield breaching rates are increased or decreased based on the best judgment of the umpire.
3. Mine clearing parties are organized and equipped as described in FM 20-32, section IV, Chapter 7.

To assess realistic casualties and damage resulting from the employment of nuclear weapons, it is necessary to establish general exposure criteria. Controllers and umpires use their professional judgment and modify the data cited in the following table if the players institute special measures to minimize troop vulnerability.

Table XLIV. Personnel exposure criteria table.

Activity and type of unit	Percentage exposed	Percentage protected
Approach march—dismounted troops.	90	10
motorized (trk) units.	75	25
armored carriers...	5	95
Assembly areas—all types of units...	35	65

Table XLIV. Personnel exposure criteria table—Continued

Activity and type of unit	Percentage exposed	Percentage protected
Defensive positions—infantry.....	25	75
reinf armor....	15	85
Artillery (towed) in firing positions...	30	70
Attack—dismounted infantry.....	85	15
infantry in armored carriers.	15	85
tanks.....	5	95
Command posts—brigade or regiment.	Use percentages outlined above according to situation faced by unit.	
battalion company		
Command posts—division and higher.	40	60
Civilians—use condition above which most closely approximates the civilian situation.		

Table XLV. Flash-bang time table (seconds from flash to sound arrival) (distance from GZ).

Row number	Ring letter						
	(Yield KT)	A (5 km)	B (10 km)	C (15 km)	D (20 km)	E (25 km)	F (30 km)
1	(1)	14	29	43	57	71	86
2	(2)	14	29	43	57	71	86
3	(5)	14	29	43	57	71	86
4	(10)	14	29	43	57	71	86
5	(20)	14	29	43	57	71	86
6	(50)	14	29	43	57	71	86
7	(100)	14	29	43	57	71	86
8	(200)	14	29	43	57	71	86
9	(500)	14	29	43	57	71	86
10	(1000)	14	29	43	57	71	86
11	(2000)	14	29	43	57	71	86
12	(5000)	14	29	43	57	71	86

INSTRUCTIONS

Instructions for use of tables XLV through XLVIII.

a. Sighting data obtained on nuclear bursts are used by players to determine the yield of enemy weapons and to assist in the prediction of fallout. Controllers or umpires provide the data that players would be able to observe if they (the players) had been able to make the actual sightings. Player units within 30 kilometers of the burst, except those within the immediate effects radii, may be furnished sighting data. Players furnished sighting data use it to complete the observer's initial report, giving basic data (NBC 1) (table LXI).

b. The tables are constructed identically with two elements necessary for entry: row number (horizontal entry by yield) and distance of the player unit from ground zero (vertical entry by ring letter).

c. To obtain the ring letter for vertical entry, the controller (umpire) uses the coordinates of ground zero and the coordinates of the center of mass of the player unit which could observe the burst. Using the coordinates, the umpire determines the ring letter column of entry by measuring the distance of the player unit from ground zero in kilometers. To assist in plotting data, the controller (umpire) may use a burst sighting template to determine distance and azimuth to ground zero. The template consists of six concentric circles 5 kilometers apart representing the ring letter distances of the tables. It also shows radial lines in degrees printed to read as "back-azimuths." The

use of the template in conjunction with the tables allows a rapid determination of sighting data without making any mathematical computations.

d. The row number for horizontal entry is based on the planned yield of the weapon fired. The tables are based on a contact surface burst for the yield concerned. If the weapon detonates in the air but below the fallout-safe height of burst, use the row of entry for a weapon of the next smaller yield. Height of burst adjustment factors are obtained from TM 3-210.

Table XLVI. Fireball width table in mils (at time "bang" reaches observer).

Row number	Ring letter						
	(Yield KT)	A (5 km)	B (10 km)	C (15 km)	D (20 km)	E (25 km)	F (30 km)
1	(1)	105	65	52	---	45	34
2	(2)	120	76	60	51	44	39
3	(5)	144	94	72	62	53	47
4	(10)	168	105	84	72	62	55
5	(20)	195	122	97	82	71	64
6	(50)	238	149	117	100	87	78
7	(100)	270	170	135	115	100	90
8	(200)	(1)	200	158	132	116	104
9	(500)	(1)	240	190	162	140	126
10	(1000)	(1)	275	220	185	160	145

¹ At this distance a meaningful azimuth reading cannot be obtained.

Table XLVII. Cloud bottom elevation table (mils) (10 minutes after burst).

Row number	Ring letter						
	(Yield KT)	A (5 km)	B (10 km)	C (15 km)	D (20 km)	E (25 km)	F (30 km)
1	(1)	190	100	(1)	(1)	(1)	(1)
2	(2)	470	250	175	130	100	(1)
3	(5)	800	460	312	238	190	160
4	(10)	(1)	580	410	310	255	210
5	(20)	(1)	700	495	400	320	260
6	(50)	(1)	800	605	480	400	340
7	(100)	(1)	(1)	700	550	450	385
8	(200)	(1)	(1)	750	600	500	440
9	(500)	(1)	(1)	(1)	690	570	480
10	(1000)	(1)	(1)	(1)	730	620	540

¹ At this distance a meaningful azimuth reading cannot be obtained.

Table XLVIII. Cloud top elevation table (mils) (10 minutes after burst).

Row number	Ring letter						
	(Yield KT)	A (5 km)	B (10 km)	C (15 km)	D (20 km)	E (25 km)	F (30 km)
1	(1)	510	278	188	142	114	95
2	(2)	800	460	310	240	193	162
3	(5)	(1)	640	460	355	300	237
4	(10)	(1)	775	575	450	375	312
5	(20)	(1)	(1)	675	540	445	375
6	(50)	(1)	(1)	775	630	530	450
7	(100)	(1)	(1)	(1)	700	590	500
8	(200)	(1)	(1)	(1)	750	650	500
9	(500)	(1)	(1)	(1)	(1)	710	620
10	(1000)	(1)	(1)	(1)	(1)	760	670

¹ At this distance a meaningful azimuth reading cannot be obtained.

Table XLIX. Casualty effects of radiation doses.

Total dose (rad)	1. Early effects of total dose received in percentage of casualties to be assessed.		2. Time to begin assessing casualties in hours after dose was received.
	A. 1 day	B. 1 week	
Less than 50-----	0	0	—
100-----	5	0	8
150-----	15	5	7
200-----	20	15	7
300-----	50	30	6
450-----	90	90	4-5
650-----	100	100	2-3

EXPLANATION (table XLIX)

a. This table gives the percentage of casualties to be assessed and the time to begin assessment. Casualties will exhibit early effects from total dosages received. Evacuation of those becoming sick is a command prerogative based on the situation. Those becoming sick will become ineffective in 24 to 36 hours and will remain ineffective for varying periods of time.

b. Controllers (umpires) calculate total dose received by players and length of time it took the players to accumulate the dose. The table is entered horizontally by the total dose and vertically by length of time (either column 1A or 1B). The percentage of casualties to be assessed is read directly and the time delay in assessment is then read from column 2.

Table L. Dose rates at specified hours.

Time from detonation	Overall dose rate decay factors T ^{-1.2}	Contour 3,000 rad/hr	Contour 1,000 rad/hr	Contour 300 rad/hr	Contour 100 rad/hr	Contour 30 rad/hr	Contour 10 rad/hr
H+1	1.000	3000	1000	300	100	30	1
H+2	0.436	1308	436	131	44	13	0
H+3	0.268	804	268	80	27	8	0
H+4	0.190	570	190	57	19	6	0
H+5	0.145	435	145	44	15	4	0
H+6	0.116	348	116	35	12	4	0
H+7	0.096	288	96	29	10	3	0
H+8	0.083	249	83	25	8	3	0
H+9	0.072	216	72	22	7	2	0
H+10	0.063	189	63	19	6	2	0
H+11	0.056	168	56	17	6	2	0
H+12	0.051	153	51	15	5	2	0
H+13	0.046	138	46	14	5	1	0
H+14	0.042	126	42	13	4	1	0
H+15	0.039	117	39	12	4	1	0
H+16	0.036	108	36	11	4	1	0
H+17	0.033	99	33	10	3	1	0
H+18	0.031	93	31	9	3	1	0
H+19	0.029	87	29	9	3	1	0
H+20	0.027	81	27	8	3	1	0
H+21	0.026	78	26	8	3	1	0
H+22	0.025	75	25	8	3	1	0
H+23	0.023	69	23	7	2	1	0
1 day	0.022	66	22	7	2	1	0
2 days	0.0097	30	10	3	1	0	0
3 days	0.0059	18	6	2	1	0	0
4 days	0.0042	12	4	1	0	0	0
5 days	0.0032	9	3	1	0	0	0
6 days	0.0026	9	3	1	0	0	0
1 wk	0.0022	6	2	1	0	0	0
1 mo	0.0004	1	0	0	0	0	0

EXPLANATION (table L)

a. This table provides dose rates (survey meter readings) in the open that players would obtain for residual radiation at specified hours after a surface burst. Horizontal entry into the table is by hour after the burst. Vertical entry is by dose rate contour referenced to H+1 hour. A special column, overall dose rate decay factors, is used to permit the computation of dose rates at specific hours for radiation dose rates obtained by interpolation between contours on the fallout pattern. Direct interpolation may also be used between vertical columns.

b. Example of direct reading. The player unit is monitoring fallout at a point nearest to the 100 rad/hr contour line. The time is 4 hours after the burst. The umpire (controller) determines the survey meter reading in the open that the player

unit could observe. The umpire first consults the fallout plot to determine the dose rate at H+1. If the point falls on the 100 rad/hr contour and the time is H+4, the umpire reads across the H+4 line to the 100 rad/hr column. The table indicates that at H+4 the survey reading should be 20 rad/hr.

c. Example of interpolated and corrected reading. The player unit is making a radiological survey. The point player selected to make a reading is between the 300 and 100 rad/hr contour line of the fallout plot. The time is H+5.

Step 1. From the fallout plot the dose rate of H+1 for the point where player takes a reading is estimated to be 200 rad/hr.

Step 2. The umpire multiplies 200 rad/hr by the overall dose rate decay factor. In this case the factor for H+5 is .15. Then $200 \times .15 = 30$ rad/hr. The survey meter reading is 30 rad/hr.

Table LI. Total dose between specified time periods (rads).

Time of stay (from—to)	MF	H+1 Dose rate contours (rad/hr)					
		3000	1000	300	100	30	10
H+1—H+2	0.64	1920	640	192	64	19	6
H+2—H+3	0.34	1020	340	102	34	10	3
H+3—H+4	0.23	690	230	69	23	7	2
H+4—H+5	0.17	510	170	51	17	5	2
H+5—H+6	0.145	435	145	44	15	4	2
H+6—H+7	0.110	330	110	33	11	3	1
H+7—H+8	0.092	276	92	28	9	3	1
H+8—H+9	0.080	240	80	24	8	2	1
H+9—H+10	0.069	207	69	21	7	2	1
H+10—H+11	0.062	186	62	19	6	2	1
H+11—H+12	0.055	165	55	17	6	2	1
H+12—H+13	0.050	150	50	15	5	2	1
H+13—H+14	0.046	138	46	14	5	1	1
H+14—H+15	0.042	126	42	13	4	1	0
H+15—H+16	0.039	117	39	12	4	1	0
H+16—H+17	0.036	108	36	11	4	1	0
H+17—H+18	0.034	102	34	10	3	1	0
H+18—H+19	0.032	96	32	10	3	1	0
H+19—H+20	0.030	90	30	9	3	1	0
H+20—H+21	0.028	84	28	8	3	1	0
H+21—H+22	0.027	81	27	8	3	1	0
H+22—H+23	0.026	78	26	8	3	1	0
H+23—H+24	0.025	75	25	8	3	1	0

EXPLANATION (table LI)

a. This table indicates the total dose received in the open between specified time periods of 1 hour duration by personnel occupying an area contaminated by residual radiation. The table is not designed for interpolation. Otherwise it is identical in construction to table L.

b. Example of a single hour dose. A player unit is in an area shown on the fallout plot as 1,000 rad/hr at H+1, and the unit stays in the area from H+6 to H+7. Reading across the table on the H+6 to H+7 line to the 1,000 rad/hr column, the column shows that the unit would receive a total dose of 110 rad during the hour.

c. Example of a dose received during a stay time longer than one hour. If the player unit had remained in the same fallout area from H+6 to H+9 hours, the total dose would be obtained as follows:

Step 1. Read the dose received for a time of stay from H+6 to H+7 for an H+1 dose rate of 1000 rads/hr, or 110 rads.

Step 2. Read the dose received for a time of stay from H+7 to H+8, or 92 rads.

Step 3. Read the dose received for a time of stay from H+8 to H+9, or 80 rads.

Step 4. Sum up the three hourly doses (110+92+80) to obtain a total dose for a three-hour stay time, or 282 rads.

Table LII. Transmission correlation factors (TF) for residual radiation.

Shielding	TF
Armored Personnel Carriers (APC).....	0.6
Foxholes.....	0.1
Shelters (3 feet earth cover).....	0.005
Tanks	
Light.....	0.2
Medium.....	0.1
Trucks	
¼ ton.....	0.8
¾ ton.....	0.7
2½ ton.....	0.6
4-7 ton.....	0.5

EXPLANATION (table LII)

a. Factors are listed which allow the computation of dose rates within various types of shielding. The factors are multiplied by outside dose rates to obtain dose rates within the shielding. They are used in conjunction with the dose rate and total dose tables.

b. As an example, a player unit wants to know the monitoring reading taken inside a foxhole. The umpire (or controller) has determined that the outside dose rate reading at the foxhole is 50 rad/hr. The transmission factor for foxholes is 0.2. The umpire then multiplies 50 rad/hr $\times$ 0.2 = 10 rad/hr. The reading inside the foxhole is 10 rad/hr.

Table LIII. Induced radiation.

1. Time after detonation (hr)	2. Fraction of dose rate at 1 hour	1. Time after detonation (hr)	2. Fraction of dose rate at 1 hour
1-----	1.00	25	0.31
2-----	0.95	26	0.30
3-----	0.90	27	0.28
4-----	0.84	28	0.27
5-----	0.77	29	0.26
6-----	0.73	30	0.25
7-----	0.715	31	0.24
8-----	0.69	32	0.23
9-----	0.665	33	0.22
10-----	0.63	34	0.20
11-----	0.60	35	0.19
12-----	0.57	36	0.18
13-----	0.55	37	0.175
14-----	0.52	38	0.17
15-----	0.50	39	0.165
16-----	0.48	40	0.155
17-----	0.45	41	0.15
18-----	0.43	42	0.14
19-----	0.42	43	0.135
20-----	0.37	44	0.13
21-----	0.35	45	0.125
22-----	0.34	46	0.12
23-----	0.33	47	0.115
24-----	0.32	48	0.11

EXPLANATION (table LIII)

a. This table is used when player units pass through zones contaminated by induced radiation. Column 1 shows times from H+1 to H+48 hours after detonation, and column 2 shows the corresponding fraction to be applied to the H+1 dose rates. In using this table the umpire or controller first obtains the dose rate at ground zero. Next he obtains the radius of 2 rad/hr induced contamination from the nuclear play calculator. He then determines the H+1 dose rate for the point, area, or route applicable to the player unit.

b. For example, if the H+1 dose rate is 100 rad/hr and the time now is H+8, the umpire or controller multiplies 100 by the factor for H+8.

$$100 \times 0.69 = 69 \text{ rad/hr.}$$

The umpire using this table furnishes radiological monitoring and survey data for induced radiation to the player unit and assesses casualties, when indicated, in the same manner as for residual radiation.

APPENDIX IX

CONTROL AND UMPIRE FORMS

Table LIV. Format 1—Request for toxic chemical air or ground strike.

FROM:..... DTG:.....
TO:..... PRECEDENCE:.....
INFO COPIES TO:.....
Item a. Designation of mission:.....
b. Headquarters requesting:.....
c. Delivery unit (air or ground):.....
d. Area coverage desired:.....
e. Type of target:.....
f. Agent:.....
g. Requested time on target:.....
h. Coordinates for desired center of contamination:.....
i. G agent template code:.....
j. Bomb safety line:.....
k. Map sheet number:.....
ORIGINATOR'S NAME AND RANK:.....
TIME TRANSMITTED:.....
TIME RECEIVED:.....

Table LV. Format 2—Toxic chemical attack alert notification.

FROM:..... DTG:.....
TO:..... PRECEDENCE:.....
Item a. Designation of mission:.....
b. Time on target:.....
c. Agent:.....
d. Code designation or munitions and area coverage:.....
e. Coordinates of desired center of contamination:.....
.....
.....
.....
.....
f. Delivery means: (if applicable).....
g. Duration of fire: (if applicable).....
h. Duration of contamination: (if applicable).....
ORIGINATOR:.....
TIME TRANSMITTED:.....

Table LVI. Format 3—Toxic chemical attack loss report.

FROM:..... DTG:.....
TO:..... PRECEDENCE:.....
Item a. Designation of mission:.....
b. Time on target:.....
c. Agent:.....
d. Delivery means:.....
e. Unit(s) under attack:.....
f. Activity of troops at time of attack:.....
g. CBR discipline of unit:.....
h. Personnel losses:.....
 (1) Deaths:.....
 (2) Incapacitation:.....
NAME OF UMPIRE:.....
TIME TRANSMITTED:.....

Table LVII. Format 4—Umpire daily report.

FROM:..... DTG:.....
TO:..... PRECEDENCE:.....
INFO COPIES TO:.....
a. Mission of unit.
b. Unit tactical situation
 (1) Locations of units in contact.
 (2) Locations of organic units, reserves, command posts, heliports, boundaries, etc.
 (1) Locations of supporting or attached units.
 (4) Synopsis of situation for period.
 (5) Operational Effectiveness of unit (excellent, satisfactory, unsatisfactory). (Give details concerning commander, staff, and units to justify adjectival ratings.)
c. Unit administrative situation.
 (1) Personnel.
 (a) Number of assessed casualties.
 (b) Number of replacements.
 (c) Total combat effective strength of unit.
 (d) Morale of individuals and unit.
 (e) Discipline of individuals and unit.
 (2) Logistics.
 (a) Class III and V expenditures and losses.
 (b) Critical shortages.
 (c) Supply consciousness of individuals and unit.
 (d) Maintenance of equipment.
 (e) Use of transportation.
 (f) Synopsis of logistical situation.
 (3) Administrative effectiveness of unit (excellent, satisfactory, unsatisfactory). (Give details concerning command and staff knowledge and influence, and unit implementation.)
d. Summary of plans for next period.
ORIGINATOR'S NAME AND RANK.....
TIME TRANSMITTED.....
TIME RECEIVED.....

Table LVIII. Format 5—Certificate of obstacle (front).

CERTIFICATE OF OBSTACLE

(To be completed by unit officer when umpire is not present.)

1. TYPE AND NATURE OF OBSTACLE (Example: Bridge demolition, bridge damaged by bombs, road crater, prepositioned weapons.)
2. METHOD USED (Brief description of work done. Example: Destroyed abutments by tamped charges.)
3. MATERIAL OR EXPLOSIVE USED (Example: for abutments, 6 charges 200 pounds each, 10 charges 15 pounds each.)
4. STARTER (Date and hour)
COMPLETED (Date and hour) or DATE AND HOUR BOMBED
5. COMMENT:

UMPIRE CERTIFICATE

1. I HAVE INSPECTED THE OBSTACLE DESCRIBED ABOVE AND FIND THAT IT (WILL) (WILL NOT) CREATE AN EFFECTIVE MILITARY OBSTACLE.
2. DATE AND HOUR EXECUTED: (If no umpire is present at the time of execution, this may be completed by the senior officer of the executing party and is official. An umpire will verify all such work executed by his unit as soon as practicable.)

UNIT OFFICER

UMPIRE

OBSTACLE REDUCED AT....HR

DATE.....

BY.....

(Unit)

(Signature of umpire)

(Rank)

Table LVIX. Format 6—Certificate of obstacle (back).

INSTRUCTIONS—UMPIRES

ACTIONS: Require operations to be actual whenever possible. Fill in data on reverse side and give to guard at obstacle. Check that material to execute or reduce simulated obstacles is at site when operations are carried out. Visit all detachments sent on obstacle work to complete the certificate.

SPECIAL NOTES

Troops may go around an obstacle, provided the movement is actual. The umpire with a delayed unit will not modify the provisions of the certificate of obstacle under any circumstances.

When a defended obstacle is attacked by opposing forces, the result of the attack is decided as in any similar action. The clearing of an obstacle by the attacker can commence only after successful completion of the attack is ruled by the umpire.

	<u>Diagnosis</u> _____	PART A No _____	PART B No _____
		SIMULATED CASUALTY Time _____	<u>Name</u> _____
		<u>Type</u> <u>Check One</u>	<u>Service No</u> _____
		Litter _____	<u>Organization</u> _____
		Walking _____	<u>Casualty Evacuated to</u> (Insert Highest Number from 1 to 4 As Appli- cable. See Part A of Tag.) _____
	Dead _____		
	Evacuate Casualty, In Turn, <u>To Stations Checked ()</u>		
		<u>Check</u>	
	1. Bn Aid Sta _____		
	2. Division Ctr Sta _____		
	3. Army Hosp _____		
	4. Div GRREG Coll Pt _____		
Disease _____		Time) _____ Date) _____	<u>Tagged</u> _____

FRONT

9-1313

<u>LEGEND</u>	<u>INSTRUCTIONS</u>	<u>INSTRUCTIONS</u>
CW -Contused Wound		
LW -Lacerated Wound		
Pen W -Penetrating Wound	1. This tag will accompany simulated casualty to medical installation ()	
MW -Multiple Wounds	checked in "Casualty Evacuation" on reverse side.	1. Remove this part of tag after filling out reverse side and tagging casualty.
Perf W-Perforating Wound		2. Forward this part to chief umpire daily with routine reports.
FS -Fracture Simple	2. This tag is <i>not</i> intended to replace FMC (DD Form 1380).	
FC -Fracture Compound		
FCC -Fracture Compound Comminuted		

BACK

4-1313

Figure 22. Format 7—Casualty tag.

(GREEN)

 Umpire	SLIGHTLY DAMAGED	
	Remain in Place for the Period of Time Needed to Repair Equipment. Display Orange Flag.	Date _____
	Date _____ Time _____	Time _____
	Location _____	Location _____
	Nature of Damage _____	Unit _____
	Type _____ Unit _____ Bumper No _____	Bumper No _____
		Damage _____
		Umpire _____

FRONT OF TAG

 Umpire	Date and Time Repaired _____	Driver or NCO in Charge, Signature _____
	Nature of Repairs _____	
	Repaired by Driver _____	
	Second Echelon _____	
	Place Repaired _____	
	Signature of Officer or NCO in Charge of Repairing Unit. _____	

BACK OF TAG

4-1313

Figure 23. Format 8—Tag to denote "slightly damaged" materiel.

(RED)

SEVERELY DAMAGED		Severely Damaged	
Umpire	Remain in Place Until Evacuated by Maintenance Equipment. You May Send for Help. Display Orange Flag Until Evacuation is Completed.	Date	_____
		Time	_____
		Location	_____
	Date _____ Time _____	Unit	_____
	Location _____	Bumper No	_____
	Nature of Damage _____	Damage	_____
Type _____ Unit _____ Bumper No _____	Umpire	_____	

FRONT OF TAG

Umpire	Date and Time Evacuated _____	Driver or NCO in Charge,
	Nature of Repairs _____	Signature _____
	Repaired by third echelon _____	
	fourth echelon _____	
	fifth echelon _____	
	Place Required _____	
	Equipment Replaced _____	
	Where Was Replacement Issued? _____	
Signature of Officer or NCC in Charge of Repairing Unit.		

BACK OF TAG

4-1313

Figure 24. Format 9—Tag to denote "severely damaged" materiel.

(WHITE)

	DESTROYED	Destroyed
 Umpire	(1) Remain in Place for 1 Hour in Case of Vehicle.	Date _____
	(2) Proceed to Your Unit.	Time _____
	(3) Remain There Until Your Supply Officer (SO) Notifies Unit that He has Replacement.	Location _____
	(4) Report to supply officer to pick up replacement.	Unit _____
		Bumper No _____
		Umpire _____

FRONT OF TAG

 Umpire	Date and Time Evacuated _____	Driver or NCO in Charge, Signature
	Equipment Replaced at _____	_____
	Date and Time of Replacement _____	
	Signature of Officer or NCO in Charge of Issuing Unit _____	

BACK OF TAG

4-1313

Figure 25. Format 10—Tag to denote "destroyed" materiel.

(BLUE)

CONTAMINATED		Contaminated
Remain in Place. You and Your Equipment are Contaminated. You may Send for Help. Display Orange Flag Until Appropriate Action has Taken Place Date____ Time____ Location____ Type____ Unit____ Bumper No____		Date_____
		Time_____
		Location_____
		Unit_____
		Bumper No_____
		Contamination_____
		Umpire_____

FRONT OF TAG

Date and Time Decontaminated_____ How Decontaminated_____ Decontaminated by first echelon_____ second echelon_____ third echelon_____ Place Decontaminated_____ Item Replaced_____ Where Was Replacement Issued_____ Signature of Officer or NCO in Charge of Repairing Unit_____	Driver or NCO in Charge, Signature _____
--	--

BACK OF TAG

4-1313

Figure 26. Format 11—Tag to denote "contaminated" materiel.

Table LX. Format 12—Nuclear burst worksheet.

SECTION I. RECORD OF NUCLEAR BURST. (Red) (Blue)
(Strike Out One)

1. Coordinates of Actual Ground Zero _____
2. Time of Burst _____
3. Height of Burst _____
4. Yield _____
5. Intensity of Neutron-Induced Radioactivity at GZ (H+1) _____
6. Damage Circle Radii ¹ (all in meters).
T _____ V _____ P _____ X _____ B _____ I _____ C _____.

¹ See sections following for significance and use of these radii.

SECTION II. ASSESSMENT OF IMMEDIATE PERSONNEL CASUALTIES.

A. All personnel except those in multi-story, wall-bearing, apartment type buildings.

Exposed ()	x ² ()	x () x 0.85 =
Unit strength	% Exposed ³	% of unit under the "X" Circle
Protected ()	x ()	x () x 0.85 =
Unit strength	% Protected ³	% of unit under the "P" Circle
		Total immed casualties

² Lower-case x signifies multiplication. Do not confuse it with uppercase X, the symbol for radius of damage circle.

³ See Personnel Exposure Criteria, Table XLIV.

B. Personnel in multi-story, wall-bearing, apartment type buildings.

Estimated number of personnel in area covered by "B" circle:

() x 0.25 = _____ killed outright.
() x 0.20 = _____ seriously injured.
() x 0.30 = _____ trapped in debris.

SECTION III. ASSESSMENT OF MODERATE EQUIPMENT DAMAGE.

Damage Circle	^a Item	^b No. in Unit	^c % of Unit Area Under Circle	Numerical Constant	^d Number Damaged
"T"	Tanks	x		x 0.85 =	
	Artillery pieces	x		x 0.85 =	
	Small arms	x		x 0.85 =	
	Machineguns	x		x 0.85 =	
	Recoilless rifles	x		x 0.85 =	
	Supply dumps (severe)	x		x 0.85 =	
"V"	Vehicles	x		x 0.85 =	
	Missiles	x		x 0.85 =	
	Veh Mtd Rkt Launchers	x		x 0.85 =	
	Sig & electronic equipment (severe)	x		x 0.85 =	
	Radars (severe)	x		x 0.85 =	

SECTION IV. ASSESSMENT OF OBSTACLE EFFECTS.

Collapse of Bridges. Concrete or masonry: 9 out of 10 inside the "T" Circle will collapse. Truss, floating, or Bailey bridges: 9 out of 10 inside the "V" Circle will collapse.

Wire Entanglements. 9 out of 10 inside the "V" Circle will blow away.

Rubble. Forms an obstacle if buildings are inside the "B" Circle.

Trees Blown Down. A serious obstacle to movement is formed by blowdown of 60% of all trees inside the "B" Circle.

Induced Radioactivity. Soil within the "I" Circle will be contaminated. The "I" Circle is the 2 rad/hr line at 1 hour after the burst. This radioactivity decays in accordance with Decay Table for induced radiation.

Fires. Forest fires and fires in built up areas.

NBC 1

PURPOSE: Observers' Initial Report, giving basic data.

NOTES:

1. NBC 1 follows the same format as the SHELREP's, MORTREP's, and BOMREP's that are in STANAG 2008 and deal with conventional enemy attacks.
2. The line items "Type of Report," D, H, and either items B and C or item F are always reported; other items are optional.

Table LXI. Format 13—Observer's initial report, NBC 1.

LETTER	MEANING	EXAMPLE NUCLEAR	EXAMPLE CHEMICAL	EXAMPLE BIOLOGICAL
	Precedence	-----	-----	-----
	Date/Time (ZULU)	-----	-----	-----
	Security	-----	-----	-----
	From	-----	-----	-----
	To	-----	-----	-----
	Type of Report	-----	-----	-----
A.	Strike Serial No. (if known)	NBC 1	NBC 1	NBC 1
B.	Position of Observer	B. LB196400	MARVILLE	
C.	Bearing or azimuth of attack from observer (in degrees or mils, say which)	C. 60 degrees	C. 60 degrees	
D.	Date/Time of attack (ZULU)	D. 201405 Z	D. 201405 Z	D. 201405 Z
E.	Illumination time (sec) or time attack ended	E. 4	E. 201412 Z	
F.	Location of attack			
G.	Means of delivery, if known		G. Aerial spray	F. LB206306 actual
H.	Type of burst (air, surface or unknown), or type of toxic agent if known, or type of attack (BW, CW, registration, harassing)	H. Surface	H. Nerve	H. Biological
I.	Number of shells			
J.	Flash-bang time (sec)			
K.	Crater present or absent and diameter, if known (meters)			
L.	Fireball width, immediately after passage of shock wave (sound of detonation) (degrees or mils, say which)			
M.	Cloud height, top or bottom, 10 min after burst (degrees, mils, meters, or feet, say which)	M. 40,000 feet TOP.		

Meaning of Letter Items Used in all NBC Reports.

Nuclear Formats

- A. Strike Serial Number(s)
- B. Position of Observer (UTM or place)
- C. Bearing or Azimuth of Attack from Observer (in degrees or mils, say which)
- D. Date/Time of Attack (ZULU time)

Toxic Formats

- Strike Serial Number(s)
- Position of Observer
- Bearing
- Date/Time of Attack

Nuclear Formats

Toxic Formats

- E. Illumination Time (seconds)
- F. Location of Attack (Coordinates or place)
- G. Means of Delivery, if known
- H. Type of Burst, Air Surface, or Unknown (say which) Including Height if known

- Time Attack Ended
- Area Attacked
- Means of Delivery
- Type of Toxic Agent, if known
- Type of Attack (biological or chemical)

- I. Number of Shells
- J. Flash-Bang Time (seconds)
- K. Crater Present or Absent and Diameter, if Known (Meters)
- L. Fireball Width, Immediately After Passage of Shock Wave/Sound of Detonation (Degrees or Mils, say which)
- M. Cloud Height, Top or Bottom. 10 Minutes After Burst, (In Degrees, Mils, Meters, or Feet, say which)
- N. Estimated Yield (KT)
- O. Reference Date/Time for Estimated Contours
- P. Area of Expected Contamination (UTM)
- Q. Location of Reading
- R. Dose Rate (rad/hour)
- S. Date/Time of Reading H+1
- T. H+1 Date/Time
- U. 1,000 Rad/Hour Contour Line Coordinates (UTM) (Red)
- V. 300 Rad/Hour Contour Line Coordinates (UTM) (Green)
- W. 100 Rad/Hour Contour Line Coordinates (UTM) (Blue)
- X. 30 Rad/Hour Contour Line Coordinates (UTM) (Black)
- Y. Azimuths of Radial Lines
- Z. Effective Windspeed (KPH); Downwind Distance (Km); Cloud Radius (Km)

Area of Expected Contamination

Area of Measured Contamination (UTM) (Yellow)

Table LXII. Format 14—Worksheet for radiological fallout.

WORKSHEET FOR RADIOLOGICAL FALLOUT

1. Ground Zero
2. Effective Windspeed (KMPH)
3. Effective Wind Direction (Grid Azimuth in Degrees)
4. Downwind Distance of Zone I (KM)
5. Radiological Contamination Diagram Number
6. Estimated Yield

EXPLANATION

a. To facilitate control of data and to ease transmission problems, use prearranged radiological contamination diagrams. These are prepared before the exercise if "problem" weather and winds aloft are prescribed in advance for the exercise. A series of these diagrams are prepared to accommodate different yields and the differing wind patterns. In selecting an appropriate diagram, it should be remembered that the 100 rad/hr contour should not extend into Zone II of the Simplified Fallout Predictor, M5.

b. On occurrence of a surface burst, the controller (umpire) orients the proper radiological contamination diagram with his map. The fallout plot is the basic reference for the use of the other radiological tables. That is, the HM1 dose rate at any particular point is determined from this plot. See tables XLVIX through LIII.

NBC 2

PURPOSE: Report Used to Forward Evaluated Data.

- NOTES:
1. This report is normally based on two or more NBC Formats 1. It includes an estimated GZ and in the case of nuclear detonations, an evaluated yield.
 2. When adjacent agencies, e.g., Navy and National NBC Defense use a different fallout prediction system, this form may be sent to provide basic data for their fallout computations.
 3. Items A, D, F, H, and N may be repeated as often as necessary to produce a summary report.

Table LXIII. Format 15—Reporting evaluated data, NBC 2.

LETTER	MEANING	EXAMPLE (NUCLEAR)	EXAMPLE (TOXIC)
	Precedence		
	Date/Time (Z)		
	Security		
	From		
	To		
	Type of Report		
A.	Strike serial number	NBC 2	NBC 2
D.	Date/Time of attack (Z)	A. 24	A. 1
F.	Location of attack	D. 201405 Z	D. 200945 Z
G.	Means of Delivery, if known	F. LB187486	F. LB126456
H.	Type of burst, Air, Surface, or Unknown (Say which), or type of toxic agent	H. Surface	H. Nerve
N.	Estimated Yield (KT)	N. 50	

NBC 3

PURPOSE: To issue immediate warning of expected contamination.

NOTE: When adjacent agencies, e.g., Navy and National NBC Defense organizations use a different fallout prediction system, NBC 2 is sent to provide basic data for their fallout computations.

Table LXIV. Format 16—Immediate warning of expected contamination, NBC 3.

LETTER	MEANING	EXAMPLE (NUCLEAR)	EXAMPLE (TOXIC)
	Precedence		
	Date/Time (Z)		
	Security		
	From		
	To		
	Type of Report		
D.	Date/Time of Attack (Z)	NBC 3	NBC 3
F.	Location of attack (UTM)	D. 201405	D. 201415 Z
P.	Area of Expected Contamination (UTM)	F. LB187486	F. LB206300
			P. LB208320
			LB210320
			LB206310
Y.	Azimuths of radial lines		
Z.	Effective windspeed (KPH); downwind distance (Zone I-Km); cloud Radius (Km).		

NBC 4

PURPOSE: To report radiation dose rate measurements.

NOTES: 1. Letter items Q, R, and S may be repeated as often as necessary.
2. Radiation dose rates are measured in the open, 1 meter above ground. Other conditions will be specified in the message.

Table LXV. Format 17—Dose rate measurements, NBC 4.

LETTER	MEANING	EXAMPLE
	Precedence	-----
	Date/Time (Z)	-----
	Security	-----
	From	-----
	To	-----
	Type of Report	-----
Q.	Location of reading	NBC 4
R.	Dose Rate (rad/hour) (See note (1) below.)	Q. LB123987
S.	Date/Time of Reading (See note (2) below.)	R. 35.
		S. 201735 Z
		Q. LB129965
		R. 60
		S. 201650 Z
		Q. LB146808
		R. 27 Increasing
		S. 201710 Z

Note. (1) The words "Initial," "Increasing," "peak," or "Decreasing" may be added.

Note. (2) This is *not* normalized to H+1 hour.

NBC 5

PURPOSE: To report areas of contamination.

- NOTES:
1. The format is sent by means of a trace or overlay if time and distance permit.
 2. When the contamination arises from a single enemy or unidentified burst, the dose rate always refers to H+1 hour, and the letter Item T is used. But when there have been several detonations at different times or on different days and no single H+1 hour is possible, then the dose rates are reported as at a specified time using letter Item O. Letters Items O and T are therefore alternative and cannot both be used in the same report.
 3. It is not necessary or even desirable to report all four of the contours of different dose rates. Four are given to provide flexibility. (In the example only two are reported.)
 4. Letter Item X is used for chemical areas of tactical significance.
 5. When a contour closes to form a complete ring, the first coordinate is repeated at the end (see example for 300 rad/hr).
 6. Colors when used in plotting, and when sending the report by means of a trace, are as follows:

Red for 1,000 rad/hour

Green for 300 rad/hour

Blue for 100 rad/hour

Black for 30 rad/hour

Yellow for Chemical and Biological Contamination.

7. Contour lines are annotated with the dose rates.
8. Decay rates are transmitted when requested.

Table LXVI. Format 18—Areas of contamination, NBC 5.

LETTER	MEANING	EXAMPLE	EXAMPLE
	Precedence	-----	-----
	Date/Time (Z)	-----	-----
	Security	-----	-----
	From	-----	-----
	To	-----	-----
	Type of Report	-----	-----
A.	Strike Serial number(s) causing contamination (if known)	NBC 5	NBC 5
O.	Reference Date/Time for estimated contours (see note b above)	A. 24	A. 1
T.	H+1 Date/Time		
U.	1,000 rad/hr contour line coordinates	T. 201505 Z	T. 201045 Z
V.	300 rad/hr contour line coordinates		
		V. ND651455	
		ND810510	
		ND821459	
		ND651455	
W.	100 rad/hr contour line coordinates	W. ND604718	
		ND991686	
		ND114420	
		ND595007	
X.	30 rad/hr contour line coordinates or area of tactical significance of TOXIC contamination (STATE IF TOXIC)		X. TOXIC.
			ND206991
			ND201575
			ND200787
			ND206991

Table LXVII. Format 19—Completed radiological data sheet (monitoring).

RADIOLOGICAL DATA SHEET MONITORING AND POINT TECHNIQUE (FM 3-12)					DATE 5 JUNE 1962		PAGE NO. 1		NO. OF PAGES 1	
SURVEY PARTY OR MONITORING UNIT DESIGNATION ALPHA-ONE					MONITOR (Print name) CPL JAMES JONES					
MAP USED GERMANY SHEET 252 1:50,000					TYPE OF VEHICLE OR OTHER SHIELDING APC			INSTRUMENT TYPE IM-174/PD		
READ- ING NO.	LOCATION	TIME	DOSE RATE (rad/hr)	DO NOT USE ¹	READ- ING NO.	LOCATION	TIME	DOSE RATE (rad/hr)	DO NOT USE ¹	
1	NV188797	0900	6	H ¹	16					
2	"	0915	PEAK 17	266	17					
3	"	0945	14	218	18					
4	"	1015	12	188	19					
5					20					
6					21					
7					22					
8					23					
9					24					
10					25					
11					26					
12					27					
13					28					
14					29					
15					30					

REMARKS
H-HOUR = 0730 $\eta = 0.8$
 $CF = \frac{60}{6} = 10$ $NF(0915) = 1.56$
 $OCF = 10 \times 1.56 = 15.6$

CORRELATION FACTOR DATA									
LOCATION	READ- ING NO.	DOSE RATE (rad/hr)		CF ¹	LOCATION	READ- ING NO.	DOSE RATE (rad/hr)		CF ¹
		INSIDE	OUTSIDE				INSIDE	OUTSIDE	
NV188797	1	6	60	10					

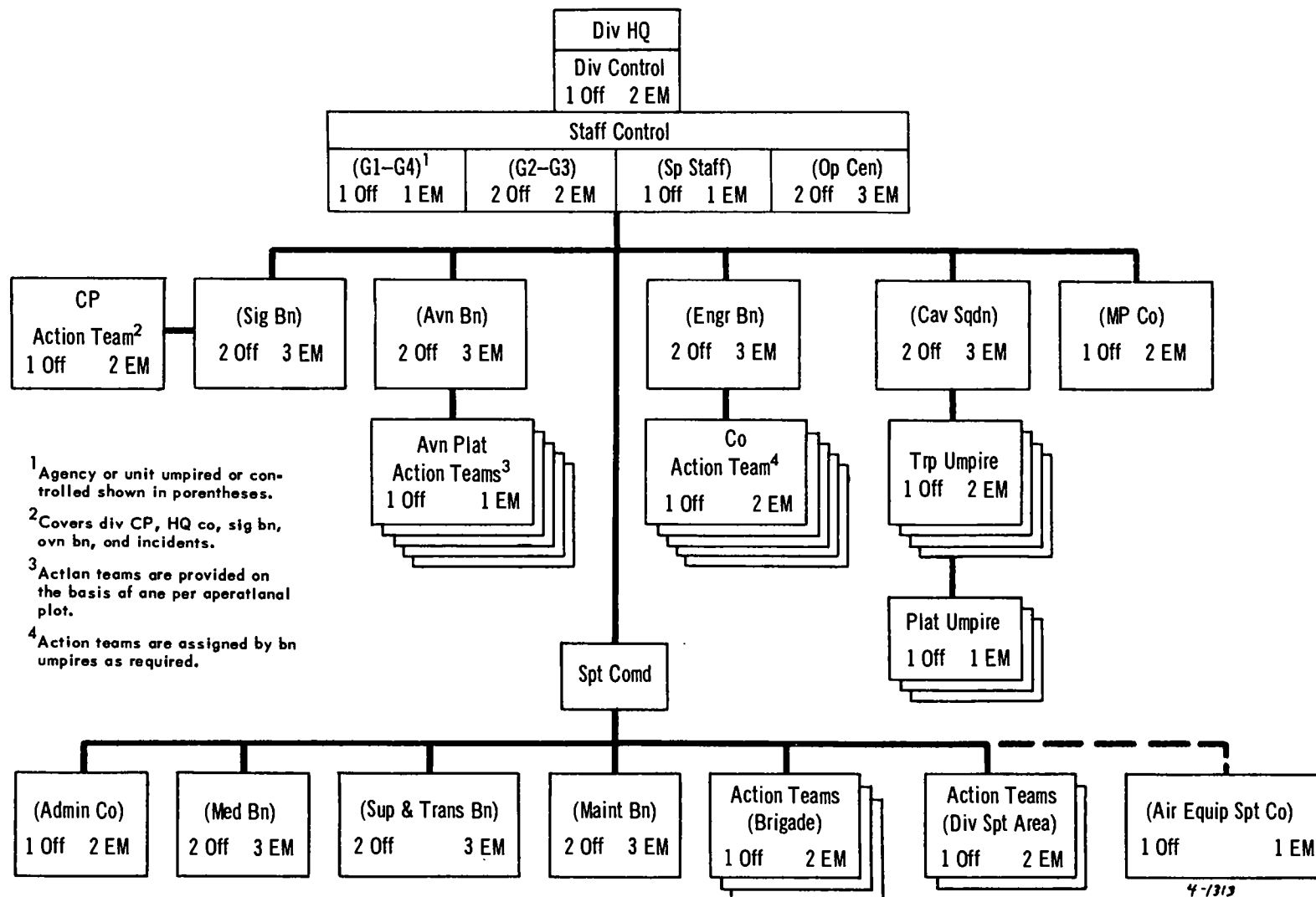
¹ DO NOT USE. For control party use only.

Table LXVIII. Format 20—Completed radiological data sheet (aerial survey).

RADIOLOGICAL DATA SHEET ROUTE TECHNIQUE OR COURSE LEG TECHNIQUE (Ground and Aerial Survey) (FM 3-12)					DATE 5 JUNE 1962		PAGE NO. 1		NO. OF PAGES 1				
SURVEY PARTY DESIGNATION BRAVO-TWO					MONITOR (Print name) PFC PETER SMITH								
MAP USED GERMANY SHEET 252 1:50,000					AIRCRAFT OR VEHICLE TYPE H-23			INSTRUMENT TYPE IM-174/PD					
ROUTE OR COURSE LEG DESIGNATION					CK-CE		CE-BF						
TIME AT START OF LEG OR ROUTE					0950		0955						
TIME ROUTE COMPLETED (Ground) OR SURVEY HEIGHT (Air) ¹					200 FT		200 FT						
DISTANCE OR TIME INTERVAL USED					10 SEC		10 SEC						
REMARKS TIME OF BURST - 0730 AGCF = 3.8 $\eta = 0.8$ <u>CK-CE</u> NF = 1.96 OCF = $3.8 \times 1.96 = 7.64 = \underline{7.6}$ <u>CE-BF</u> NF = 2.01 OCF = $3.8 \times 2.01 = 7.84 = \underline{7.8}$ ¹ Times of start and stop are reported for each route or portion of route completed at one time by ground survey. If a route is done in parts, use a separate column for each part. ² DO NOT USE. For control party use only.					READING NO.	DOSE RATE (rad/hr)	DO NOT USE (For control party use only)	READING NO.	DOSE RATE (rad/hr)	DO NOT USE (For control party use only)	READING NO.	DOSE RATE (rad/hr)	DO NOT USE (For control party use only)
					1	12	91	1	2	16	1		
					2	12	91	2	2	16	2		
					3	11	84	3	2	16	3		
					4	11	84	4	3	23	4		
					5	10	76	5	3	23	5		
					6	9	68	6	3	23	6		
					7	8	61	7	3	23	7		
					8	7	53	8	4	31	8		
					9	6	46	9	4	31	9		
					10	5	38	10	5	39	10		
					11	5	38	11	5	39	11		
					12	5	38	12			12		
AIR-GROUND OR VEHICLE CORRELATION FACTOR DATA					13	4	30	13			13		
LOCATION	HEIGHT (Feet) AIR ONLY	DOSE RATE (rad/hr)		CF ²	14	4	30	14			14		
		INSIDE AIR	OUTSIDE GROUND		15	3	23	15			15		
BF	200	5	19	3.8	16	3	23	16			16		
					17	2	15	17			17		
					18			18			18		
					19			19			19		

APPENDIX X

CONTROL AND UMPIRE ORGANIZATIONS



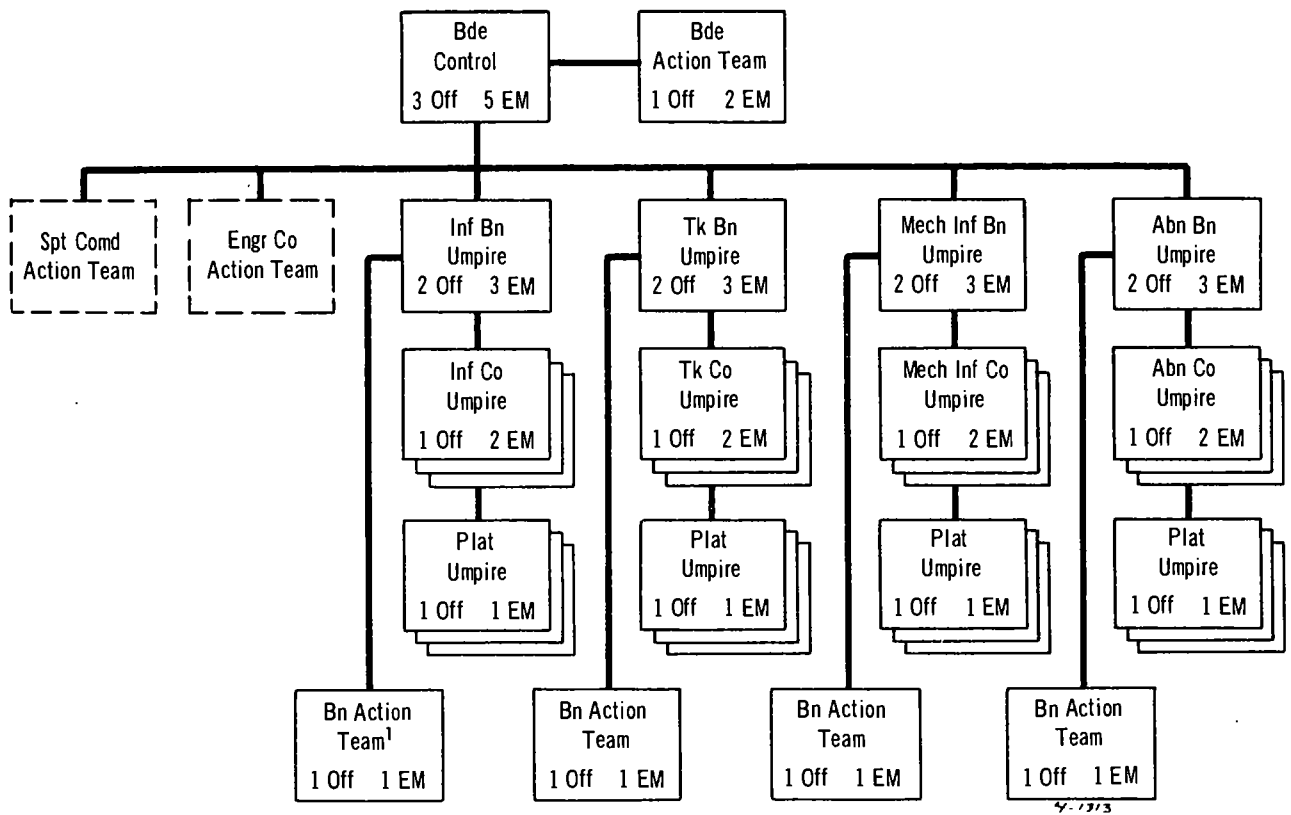
¹ Agency or unit umpired or controlled shown in parentheses.

² Covers div CP, HQ co, sig bn, avn bn, and incidents.

³ Action teams are provided on the basis of one per operational plot.

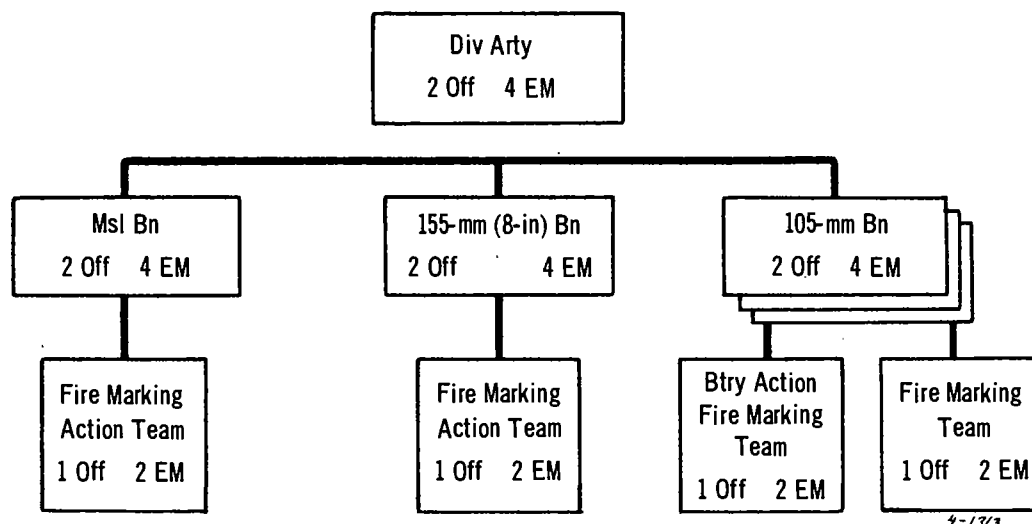
⁴ Action teams are assigned by bn umpires as required.

Figure 27. Umpire/control organization, division participating in a field exercise or field maneuver.



¹Umpires actions as directed by battalion umpire, including battalion support platoons.

Figure 28. Brigade umpire/control organization, division field exercise or field maneuver.



4-13/3

NOTES:

1. Controllers and umpires at division artillery and battalion level:
 - a. Perform normal duties of control—receive and transmit information and reports of player activities and control instructions.
 - b. Operate control FDC to direct conventional artillery, mortar, nuclear, biological, and chemical fire marking.
 - c. Direct the activities of subordinate fire marking/action teams.
2. Fire marking teams:
 - a. Mark fires from friendly and opposing fire units—artillery or mortar.
 - b. Mark nuclear, biological, and chemical fire and assist umpires in disseminating damage and loss data to player units.
3. If fire marking team has additional duty of battery action, it marks fires in rear areas (from opposing forces) and also performs as unit umpire for units affected (if there are no unit umpires), particularly artillery batteries to "paint picture" and assess casualties and losses.
4. It is advisable to provide airmobility for at least two of the four rear area fire marking/action teams.

Figure 29. Artillery umpire/control and fire marking organization, division field exercise or field maneuver.

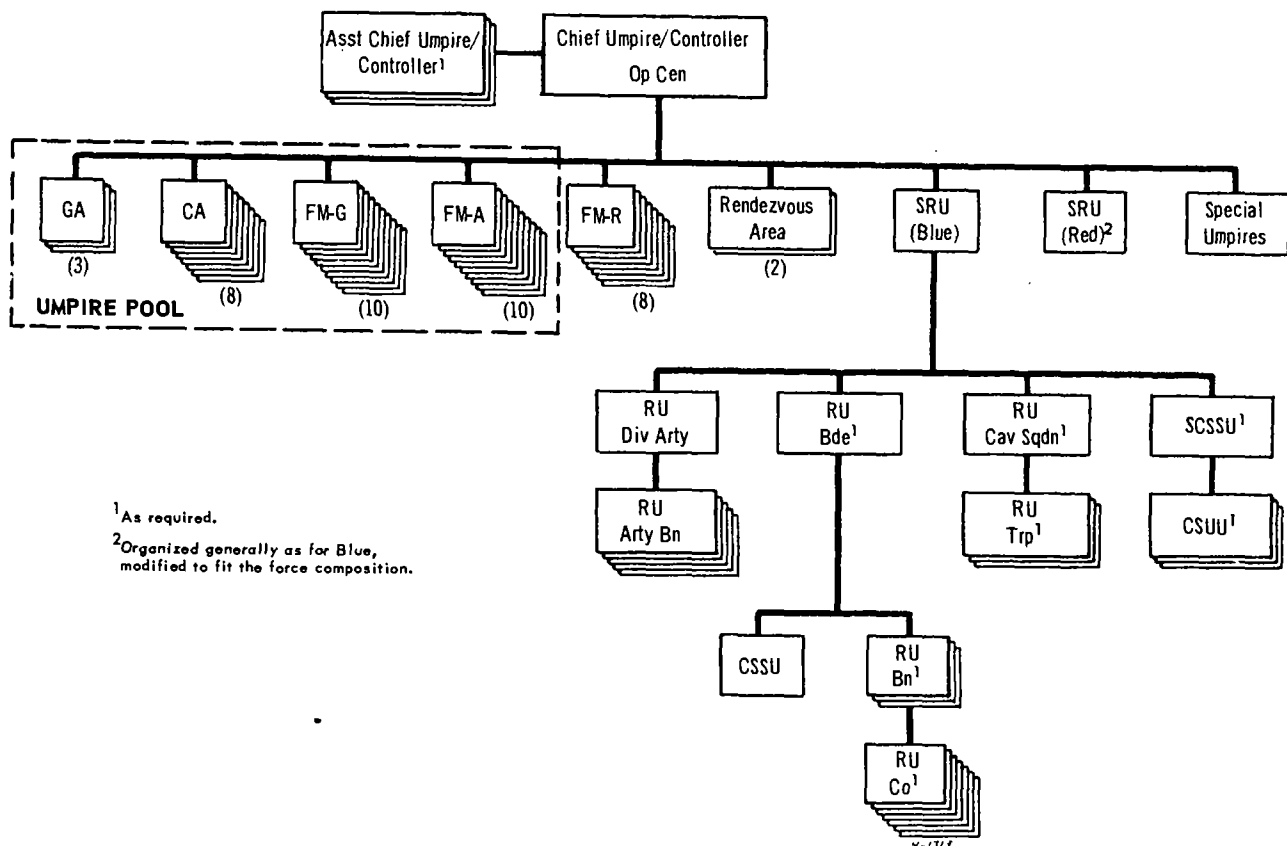


Figure 30. Typical umpire organization, area umpire system.

Table LXIX. Composition of umpire teams, area umpire system.

Type	Title	Composition
GA	Group action team.....	1 team chief—col/lt col 1 assistant—NCO 1 driver/radio operator—EM
CA	Company action team.....	1 team chief—maj/capt 2 assistants—NCO 3 drivers/radio operators—EM
FM-G	Fire marker, ground.....	1 team chief—capt/lt 1 assistant—NCO 1 driver—EM
FM-A	Fire marker, air.....	1 pilot—lt/WO 1 umpire—lt/WO
FM-R	Fire marker, relay.....	1 team chief—capt/lt 1 assistant—NCO 1 driver/radio operator—EM
SRU	Senior resident umpire.....	1 umpire—col 1 assistant—capt 1 driver/radio operator—NCO
RU	Resident umpire.....	1 umpire—capt/lt 1 driver—EM
SCSSU	Senior combat svc support umpire.....	1 umpire—lt col/maj ¹ 1 assistant—NCO
CSSU	Combat svc support umpire	
CSSUU	Support umpire combat svc support unit.....	1 umpire—maj/capt 1 assistant—NCO and driver

¹ With technical service assistants as may be required.

Note (1). Net is shown as it might be established for a given tactical situation. Stations are added and withdrawn as various umpire elements pass to and from the jurisdiction of this particular GA team.

Note (2). Each FM-G team operates on a permanently assigned frequency. FM-R teams establish communication with FM-G teams as required for each fire mission.

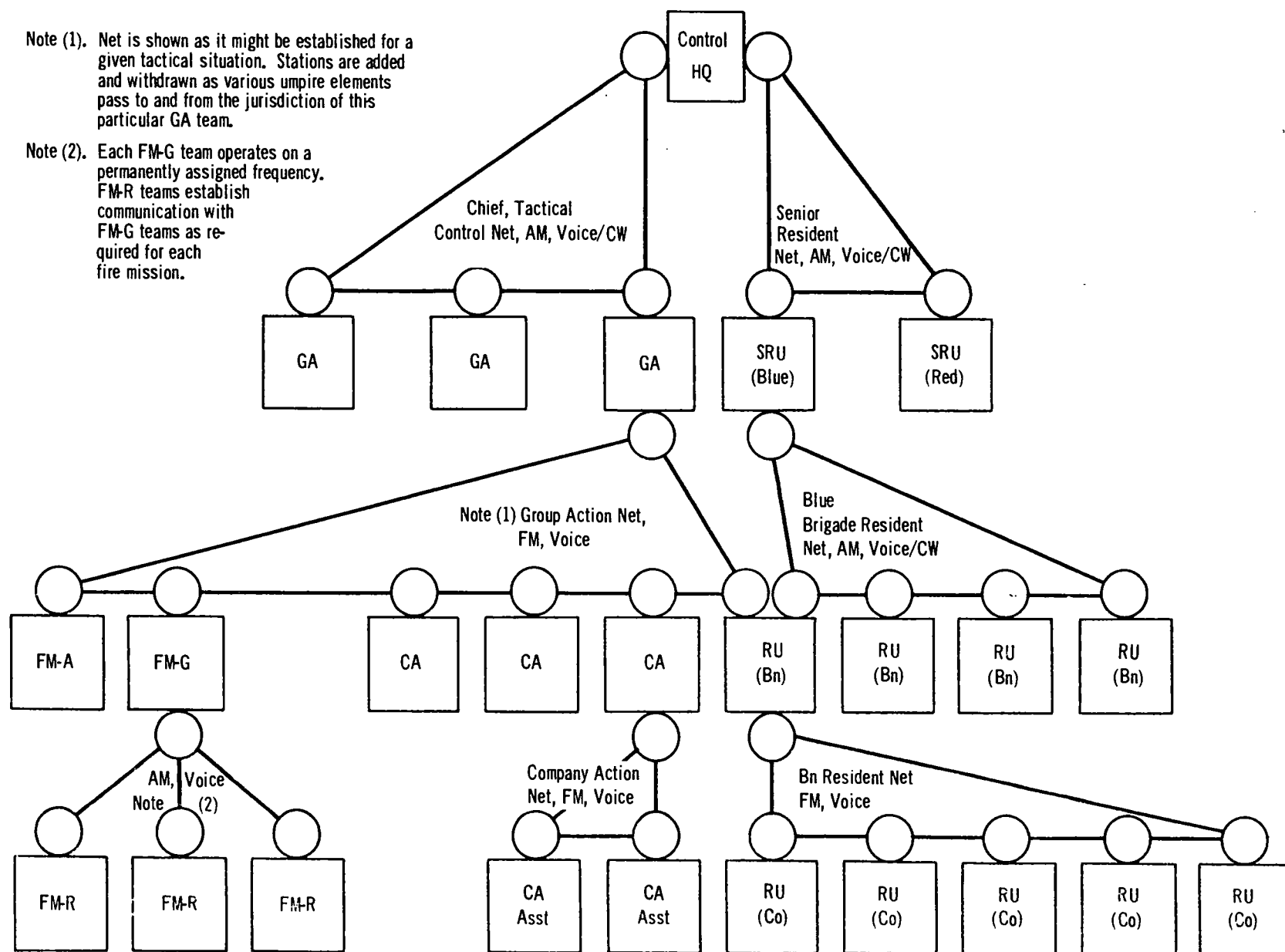


Figure 31. Typical umpire radio nets, division exercise, area umpire system.

APPENDIX XI

UMPIRE TRAINING PROGRAM

The following training program may be used as a guide for the preparation of umpire training schedules. If the exercise plan calls for special operations, then the schedule is modified to include umpire training in these special operations.

Subject	Hours
<i>Introductory</i>	2
Official welcome.....	1/6
Purpose and scope of exercise.....	2/6
Maneuver area rights and restrictions.....	1/2
Participating troops.....	1
<i>General subjects</i>	49
Umpire school organization and umpire organization.....	1
Supply and supply economy.....	1
Orientation on Aggressor.....	1
Aggressor demonstration.....	1
Safety precautions.....	1
Map reading.....	5
Use of intelligence.....	2
Reconnaissance of exercise area.....	8
Maneuver control.....	1
Landmine warfare.....	2
Chemical and biological operations.....	2
Employment of pyrotechnics and control devices.....	1
Orientation on the air-ground system.....	1
Communication plan for the exercise.....	1
Radiotelephone procedure.....	1
Operation of radio sets and communication security.....	1
SOI-SSI-SOP.....	1
Communication field exercise with review.....	3
Conduct of the maneuver, maneuver control, area rights, and restrictions.....	1
Command post exercise.....	8
Nuclear aspects of the exercise.....	2
Organization and tactics (concurrently by umpire assignment).....	2
Artillery.....	(2)
Antiaircraft artillery.....	(2)
Armored units.....	(2)
Organization of infantry and airborne divisions.....	(1)
Employment of infantry in offensive and defensive operations.....	(1)
Organization and operation of airborne corps ¹	(1)
Airborne assault ¹	(1)
Special forces units.....	(1)
Tank-infantry-artillery team.....	1
Civil affairs.....	1
<i>Umpiring</i>	25
Umpiring duties, general.....	1
Tactical and organizational factor of ground umpiring.....	2

¹ Used only when exercise is predominantly airborne or is required for proper umpire orientation. Time to be taken from open time.

Subject	Hours
<i>Umpiring—Continued</i>	
Capture of personnel and materiel	1
Assessment of casualties and damages	1
Umpiring landmine warfare	1
Umpiring special forces activities	1
Computation of losses due to chemical agents	1
Casualty and damage assessment due to chemical and biological attack	1
Duties of umpires in the nuclear play of the exercise	8
Fire marking procedures	3
Obstacles and delays	1
Umpiring civil affairs activities	1
Umpire records and reports	2
Intelligence (concurrently)	2
U.S. Army Security Agency umpire duties	(2)
Special operations intelligence umpire duties	(2)
Counterintelligence umpire duties	(2)
Interrogation prisoner of war umpire duties	(2)
Order of battle umpire duties	(2)
Image interpreter umpire duties	(2)
Technical intelligence umpire duties	(2)
Censorship umpire duties	(2)
Document analysis umpire duties	(2)
Recording teams umpire duties	(2)
Interpreter and translator umpire duties	(2)
Review of umpire duties	1
Examination	1
<i>Practical Umpire Training</i>	44
Field demonstration of umpire methods	2
Practical field work to include rehearsal with Aggressor forces	24
Testing of communication facilities	8
Nuclear weapon play umpiring	8
Critique of umpire training	2
Scheduled time	120
Open time	3
TOTAL	123

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EARLE G. WHEELER,
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NG: State AG (3); units—same as active Army.

USAR: Units—same as active Army.

For explanation of abbreviations used, see AR 320-50.

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